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CH2MHILL

February 24, 2003
172769

Mr. Bob Eller
Siting Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814-5504

RE: Data Response, Set 1B
Walnut Energy Center (02-AFC-4)

On behalf of the Turlock Irrigation District, please find attached 12 copies and one original of the Data Responses, Set 1B, in response to Staff's Data Requests dated January 23, 2003. We are also filing copies of this Data Response electronically.

This filing contains responses to the remaining first round data requests with the following exceptions:

- Air Quality: 17-19 and 23
- Cultural Resources: 40, 41, and 43-51
- Visual Resources: 74 (KOP 3 only)
- Water and Soils: 85

We anticipate that we will be able to respond to the remaining one on March 10, 2003.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Principal Project Manager

c: Project File
Proof of Service List

WALNUT ENERGY CENTER
(02-AFC-4)

DATA RESPONSE, SET 1B

(Responses to Data Requests: 1-16, 20-22, 35-39, 42, 43 (partial), 46, 52-59, 61, and 73, 74 (partial), 75-84, 85 (partial), and 86-97)

Submitted by

TURLOCK IRRIGATION DISTRICT (TID)

FEBRUARY 24, 2003

CH2MHILL

2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

Technical Area: Air Quality
CEC Authors: William Walters and Lisa Blewitt
WEC Authors: Jeff Adkins and Gary Rubenstein

BACKGROUND

The AFC notes that the Walnut Energy Center will be located adjacent to Turlock Irrigation District's existing Walnut Peaking Power Plant. However, certain information regarding the Walnut Peaking Power Plant was not provided in the AFC, and is not otherwise readily available. In order to better understand the overall impacts of all sources at the project site, staff requests more information regarding the Walnut Peaking Power Plant.

DATA REQUESTS

1. Please provide a copy of the SJVAPCD Permit to Operate for the Walnut Peaking Power Plant.

   Response: The Walnut Peaking Power Plant turbines are currently operating under Authority to Construct Permit Numbers N-2246-1-3 and N-2246-2-3 for modifications to the turbine fuel nozzles. These modifications are designed to meet the new "Tier 2" NOx emission limits of District Rule 4703. Copies of the Authority to Construct permits are provided as Attachment AQ-1.

2. Please identify all of the non-permitted emission sources at the Walnut Peaking Power Plant and their estimated hourly and annual emissions.

   Response: In the 10-day letter that was submitted to the CEC on February 3, 2003, we anticipated being able to respond to this data request by March 3, 2003. However, it appears that this response will not be ready until March 10, 2003.

3. Please provide the date the Walnut Peaking Power Plant began operation.

   Response: The Walnut Peaking Power Plant began operation in the first quarter of 1986**.**

4. Please, on a legible plot plan, show the location of the Walnut Peaking Power Plant exhaust stacks in relation to the proposed Walnut Energy Center exhaust stacks.

   Response: A plot plan showing the Walnut Peaking Power Plant and the WEC turbine stacks is provided as Figure AQ-4.

5. Please provide the exhaust stack parameters (x-y-z coordinates, height, diameter, velocity, temperature) for the Walnut Peaking Power Plant emissions sources.

   Response: Each Walnut peaking turbine stack is 31 feet 2 inches tall and each stack is square with an inside wall dimension of 12 feet 1 inch. The nominal stack exhaust

temperature is 900°F and nominal stack velocity at full load is 65 ft/sec. The UTM coordinates for the two stacks are listed on the attached facility plot plan.

BACKGROUND

In the AFC, linear projects for the WEC include a 0.9-mile potable water supply pipeline and a 3.6-mile natural gas pipeline (AFC page 1-1). The potable water line is not discussed as part of the construction phase impacts analysis (AFC Appendix 8.1D.2). Additionally, the construction phase impacts analysis is based on a 3.2-mile long natural gas pipeline. Staff feels the potable water supply pipeline impacts need to be determined and included in the construction phase impacts analysis. Additionally, the basis for the natural gas pipeline should be consistent.

DATA REQUESTS

6. Please provide a construction emissions estimate for the construction of the potable water supply pipeline. Please update all necessary tables in Appendix 8.1D to include the potable water pipeline construction emissions.

   Response: We understand from conversations with staff that this question is no longer relevant because the potable water pipeline will be located in a trench adjacent to the recycled water pipeline, and as a result, the construction equipment mix will remain unchanged from that used in our emissions analysis for the recycled water pipeline.

7. Please confirm the construction assumption bases for the natural gas pipeline, including the total length and pipeline route. Please update the emission estimate for the natural gas pipeline construction as necessary.

   Response: The natural gas pipeline will be 3.6 miles long. However, this does not affect the calculations or analysis in Appendix 8.1D because only worst case daily emissions were analyzed, and worst case daily emissions do not change as result of the small change in pipeline length.

BACKGROUND

In the AFC (Table 8.1D-3), offsite maximum daily emissions include truck deliveries and worker travel. However, Attachment 8.1D-1 appears to show only truck deliveries. These numbers are reported in Table 8.1D-3 for both truck deliveries and worker travel.

DATA REQUESTS

8. Please confirm the emissions (maximum daily emissions) for truck deliveries and worker travel associated with pipeline/ transmission line interconnect construction. Please update AFC Table 8.1D-3 as required.

Response: Table 8.1D-3R and Table 8.1D-1R have been revised to include worker travel associated with pipeline and transmission line construction. These revised documents are attached to this response.

BACKGROUND

In the AFC (Table 8.1-15), it is noted that SO_2 maximum emission rates for the gas turbines are based on fuel sulfur content of 0.36 grains/100 scf. Staff has reviewed other projects that have proposed sulfur contents around 0.25 grains/100 scf based on available sulfur content data from PG&E or Sempra Energy; or have proposed sulfur contents based on the Public Utility Commission fuel sulfur limit of 0.75 grains/100 scf for pipeline quality natural gas.

DATA REQUEST

9. Please provide a copy of the reference for the turbine fuel sulfur content assumption.

Response: The natural gas fuel sulfur content is based on hourly sulfur measurements taken at the PG&E Burney Compressor Station for the period December 18, 2000 through December 17, 2001. The emission factor of 0.001 lb SO_2/MMBtu is equivalent to 0.36 grains total sulfur per 100 scf of natural gas. This is approximately equivalent to the highest monthly average total sulfur content measured in the PG&E Burney data. The PG&E Burney sulfur data and summary table are provided as Attachment AQ-9.

BACKGROUND

Maximum emission rates expected during startup or shutdown are provided for NO_x, CO, and VOC for the turbines in the AFC, and additional information for hot starts and cold starts is provided in Appendix 8.1A. However, while all of the potential startup and shutdown modes (cold start, warm start, hot start and shutdown) may have different maximum emission potentials and different durations, the values presented in Table 8.1-17 (AFC page 8.1-37) only specify a single set of startup/shutdown emission values based on the Cold Start emission estimates. Staff needs additional information and clarification regarding startup and shutdown emissions to complete the review of the air quality impact analysis.

DATA REQUESTS

10. Please provide a description of the expected durations of a warm startup and a shutdown.

Response: A warm start is expected to last between 2 hours (hot start) and 5 hours (cold start). The Applicant is not distinguishing between startup types in calculating annual emissions, and has assumed an average startup emission rate of 60 lb/hr NOx for all startup conditions as described in the AFC Data Adequacy Supplement.

This average emission rate is based on data from hot and cold startup emissions provided in Table 8.1A-5 of the AFC.

11. Please confirm that a single maximum hourly and per start/shutdown emission limit is being requested for all types of startups (cold, warm, and hot) and shutdowns, or provide the hourly and per start/shutdown basis for each acceptable emission limit.

Response: A single set of maximum hourly startup/shutdown emission limits is being proposed for all startup conditions, and those limits are 119 lb/hr NOx, 129 lb/hr CO, and 16 lb/hr VOC.

12. Staff would expect that warm startups and shutdowns would have a shorter duration than that for cold starts and that they may also have lower peak and average emissions for certain pollutants. So, if a single short-term emission limit (maximum hourly and per emissions) is being requested to cover all startups and shutdowns, please provide the data showing the need for these limits during hot and warm startups and during shutdowns.

Response: Table 8.1A-5 of the AFC indicates that maximum hourly NOx and CO emissions during a hot start are 83 lb/hr and 113 lb/hr, respectively, and that maximum hourly emissions during a cold start are 119 lb/hr NOx and 129 lb/hr CO. Warm starts are expected to result in maximum emissions somewhere between these two sets of values. However, the Applicant is requesting a single maximum hourly emission rate for all startup and shutdown conditions in order to simplify monitoring and compliance. Thus, no specific maximum emission rates need be established for the various startup modes.

BACKGROUND

Operating emissions mitigation, in the form of emission reduction credits (ERCs), are based on quarterly operating emission limits within the jurisdiction of the San Joaquin Valley Air Pollution Control District. The revised operating case information provided in the AFC Supplement does not specify quarterly emission assumptions. Additionally, the emissions assumptions are not internally consistent for all pollutants. Staff needs additional information to determine that the emissions mitigation and operating emissions assumptions are consistent, and that compliance with the emission limits can be demonstrated.

DATA REQUESTS

13. Please provide the quarterly operating emission assumptions.

Response: Worst-case quarterly operating scenarios for all pollutants are simply ¼ of the worst-case annual operating scenarios described in the text associated with Table 8.1-18 of the AFC Data Adequacy Supplement. That is, ¼ of the annual operating hours and ¼ of the total annual startup hours are expected to occur each quarter, resulting in ¼ of the total annual emissions occurring each quarter.

14. Please explain how the turbine operation can be assumed to be limited to 7,280 hours of full load operation for NOx, CO and VOC emissions, and assumed to be operated for 8,760 hours at full load for SO2 and PM10 emissions. Is the Applicant proposing to accept an operating limitation of 7,280 hours at full load annually, or some similar fuel based limit; or does the Applicant expect to operate in a manner that will maintain the emissions below the specified quarterly and annual emission limits without any specific operating limits?

Response: The 7,280 hour operating scenario, with 296 startup hours per turbine as described in the text associated with Table 8.1-18 of the AFC Data Adequacy Supplement, represents worst-case annual emissions for NOx, CO, and VOC. If the WEC turbines were to operate for 8,760 hours per year at full load (with no startups/shutdowns), emissions of NOx, VOC, and CO would be lower than proposed in the AFC Data Adequacy Supplement. Conversely, 8,760 hours per year of full load operation (with no startups/shutdowns) represents worst-case for PM_{10} and SO_2 emissions, because emissions of these pollutants are lower during startup and shutdown. Thus, the WEC turbines are able to operate under either of the proposed worst-case scenarios and still meet the proposed annual emission limits for all pollutants.

15. Staff recognizes that the Applicant will install NOx and CO continuous emission monitors to demonstrate compliance with the quarterly and annual emission limits for those pollutants;, however, no VOC monitor will be available to make the same compliance demonstration. Please state whether the applicant is willing to determine a CO/VOC surrogate relationship to demonstrate compliance with VOC emission limits.

Response: The Applicant will demonstrate compliance with the VOC emission limit during its compliance source tests, and believes that these tests will demonstrate that the VOC emission concentrations and emission rates used for the WEC project conservatively overstate actual VOC emissions under the listed operating conditions. The Applicant does not believe it is necessary to establish a CO/VOC relationship to show compliance.

BACKGROUND

The AFC (Table 8.1-18, page 8.1-38), states that project CO emissions will be limited to less than 100 tons per year (tpy). Table 8.1-18 (revised version), however, shows the maximum annual CO emissions to be 101.7 tpy.

DATA REQUEST

16. Please explain how CO emissions will be limited to 100 tpy and reflect this in Table 8.1-18. The assumptions used should be consistent, or at least not

inconsistent, with those being used to limit NOx and VOC emissions. Please update AFC Table 8.1-18 as required.

Response: The Applicant will have a certified, quality assured continuous emissions monitor to continuously measure CO emissions from the WEC turbines. The Applicant expects to demonstrate compliance with the 100 TPY limit using data from this continuous monitor. The Applicant will achieve compliance by one or more of the following methods:

- Over compliance with the 4.0 ppmc CO emission limit;
- Over compliance with the proposed CO startup emission rates;
- Operation at less than full load for some fraction of the year; and
- Operation for slightly less than the maximum permitted number of operating hours.

We note that the Applicant has used very conservative operating assumptions in order to define its worst-case operating window. These worst-case assumptions result in CO emissions just above the 100-ton per year threshold. The Applicant is confident that actual, CEMS measured CO emissions will be significantly less than 100 TPY, and will accept permit limits and monitoring requirements that demonstrate this to be the case.

BACKGROUND

A general discussion of emission scenarios possible during commissioning, and emission rates and stack parameters used in the commissioning modeling analysis are provided in the AFC (page 8.1-49 and Table 8.1-21). Staff requires additional information regarding initial commissioning.

DATA REQUESTS

17. Please provide a description of the project's planned initial commissioning phase, including the types and duration's of equipment tests, criteria pollutant emissions, estimated stack parameters (i.e. velocity and temperature) for each test type, and monitoring techniques to be used during such tests.

    Response: In the 10-day letter that was submitted to the CEC on February 3, 2003, we anticipated being able to respond to this data request by March 3, 2003. However, it appears that this response will not be ready until March 10, 2003.

18. Please provide the total duration for initial commissioning per turbine, estimate the total period commissioning period emissions, and estimate the number of hours operating with elevated emissions (i.e. greater than normal operating emissions), and specify whether if any of the commissioning activities will be performed simultaneously for the two turbines.

Response: In the 10-day letter that was submitted to the CEC on February 3, 2003, we anticipated being able to respond to this data request by March 3, 2003. However, it appears that this response will not be ready until March 10, 2003.

BACKGROUND

In the AFC (page 2-18), the Applicant states that noisy construction "will be scheduled between 7 a.m. and 7 p.m. on weekdays and 9 a.m. to 8 p.m. on weekends and holidays." The modeling files, however, show construction from 6 a.m. to 6 p.m. Staff feels this discrepancy could affect construction modeling results due the high impacts normally associated with low mixing heights and low wind speeds that occur during early morning hours.

DATA REQUEST

19. Please verify the basis for maximum daily construction hours. Please provide updated construction emissions tables and modeling files as necessary.

Response: In the 10-day letter that was submitted to the CEC on February 3, 2003, we anticipated being able to respond to this data request by March 3, 2003. However, it appears that this response will not be ready until March 10, 2003.

BACKGROUND

In the AFC (page 8.1-59), the Applicant states that due to the lack of a long-term demonstration of compliance with the NO_x emissions limit of 2.0 ppmvd @ 15% O_2 on a one-hour average basis, they will seek a permit condition allowing up to 10 hours per year of excursions above this level.

DATA REQUESTS

20. Please specify the proposed maximum NO_x concentration at 15 percent O_2 to be allowed by permit condition during the proposed 10 hours per year of excursions.

Response: The Applicant proposes a NOx limit of 25 ppm at 15 percent oxygen during the 10 hours per year of excursions. This is the level currently proposed by the South Coast AQMD for the Inland Empire Energy Center.

21. Please also describe the technical circumstances that would be incorporated in permit limits that would allow a greater than 2 ppm NO_x limit average over 1 hour.

Response: The Applicant does not believe there should be any restriction on the types of circumstances that lead to the 10 hours of excursions. The 2.0 ppmc NOx limit has not been demonstrated in practice without excursion events, and these events have occurred for various reasons that need not be defined in the permit. We

are aware of no other permits in Northern California that limit such excursion events to specific circumstances.

BACKGROUND

In the Air Quality Data Adequacy Responses (page 8.1-F-1), the Applicant states that the ERCs owned by the Applicant for PM_{10} amount to 179,357 lbs (Q1=48,926; Q2=41,945; Q3=10,020; and Q4=78,466). Copies of the ERC Certificates are provided in the AFC (Attachment 8.1F-1). Staff requires additional information to verify the quantity of PM_{10} ERC certificates owned by the Applicant.

DATA REQUEST

22. Based on the certificates provided in the AFC, the project emissions in the fourth quarter (Q4) do not add up to 78,466 lbs, so there appears to be an ERC shortfall. Please provide additional ERC certificates, or binding option contract agreements, that show that the Applicant can meet the total PM_{10} offset burden. This information can be provided under confidential cover if requested, with the understanding that the information will become public when the Final Staff Assessment is published.

    Response: The Applicant has purchased additional PM10 ERCs to cover the identified shortfall. The Applicant purchased 6,430 pounds of 4th quarter PM10 credits that are now identified as ERC Certificate No. C-510-4. A copy of this ERC certificate is provided as Attachment AQ-22.

BACKGROUND

In the AFC (page 8.1-63), the Applicant states that a cumulative impacts analysis will be conducted in accordance with the protocol provided in Appendix 8.1G.

DATA REQUEST

23. Please provide a listing of cumulative projects meeting the criteria outlined in Appendix 8.1G, and provide an analysis of the cumulative air quality impacts that may result from the project and other reasonably foreseeable projects.

    Response: In the 10-day letter that was submitted to the CEC on February 3, 2003, we anticipated being able to respond to this data request by March 3, 2003. However, it appears that this response will not be ready until March 10, 2003.

ATTACHMENT AQ-1

Authority to Construct Permits

INSERT FIGURE AQ-4

Table 8.1D-1R
Maximum Daily Emissions During Construction of Linear Facilities

Natural Gas Pipeline Construction Worker Travel Daily Emissions

Number of Workers Per Day	Average Vehicle Occupancy (person/veh.)	Number of Round Trips Per Day	Average Round Trip Haul Distance (Miles)	Vehicle Miles Traveled Per Day (Miles)	Emission Factors (lbs/vmt)(1) NOx	CO	POC	SOx	PM10	Daily Emissions (lbs/day) NOx	CO	POC	SOx	PM10
12	1.3	18	70	1,292	2.87E-03	3.43E-02	2.74E-03	1.88E-06	5.83E-05	3.71	44.38	3.54	0.00	0.08

Water Pipeline Construction Worker Travel Daily Emissions

Number of Workers Per Day	Average Vehicle Occupancy (person/veh.)	Number of Round Trips Per Day	Average Round Trip Haul Distance (Miles)	Vehicle Miles Traveled Per Day (Miles)	Emission Factors (lbs/vmt)(1) NOx	CO	POC	SOx	PM10	Daily Emissions (lbs/day) NOx	CO	POC	SOx	PM10
12	1.3	18	70	1,292	2.87E-03	3.43E-02	2.74E-03	1.88E-06	5.83E-05	3.71	44.38	3.54	0.00	0.08

Transmission Line Interconnect Construction Worker Travel Daily Emissions

Number of Workers Per Day	Average Vehicle Occupancy (person/veh.)	Number of Round Trips Per Day	Average Round Trip Haul Distance (Miles)	Vehicle Miles Traveled Per Day (Miles)	Emission Factors (lbs/vmt)(1) NOx	CO	POC	SOx	PM10	Daily Emissions (lbs/day) NOx	CO	POC	SOx	PM10
10	1.3	15	70	1,077	2.87E-03	3.43E-02	2.74E-03	1.88E-06	5.83E-05	3.09	36.99	2.95	0.00	0.06

Notes:
(1) See notes for combustion emissions.

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

TABLE 8.1D-3R
Maximum Daily Emissions During Pipeline/Transmission Line Interconnect Construction
Pounds Per Day **(revised February 18, 2003)**

	NO_x	CO	VOC	SO_x	PM_{10}
Natural Gas Pipeline					
Onsite					
Construction Equipment	55.81	17.93	4.14	1.89	2.77
Fugitive Dust	--	--	--	--	4.66
Offsite					
Truck Deliveries and Worker Travel	**22.27**	**55.99**	**5.21**	0.77	**1.12**
Total Emissions	**78.08**	**73.92**	**9.35**	2.66	**8.55**
Water Pipeline					
Onsite					
Construction Equipment	61.98	22.61	4.85	2.22	3.17
Fugitive Dust	--	--	--	--	5.47
Offsite					
Truck Deliveries and Worker Travel	**31.55**	**61.80**	**6.04**	1.15	**1.64**
Total Emissions	**93.53**	**84.41**	**10.89**	3.37	**10.28**
Transmission Line Interconnect					
Onsite					
Construction Equipment	76.13	15.58	4.83	2.20	3.47
Fugitive Dust	--	--	--	--	1.14
Offsite					
Truck Deliveries and Worker Travel	**49.49**	**66.01**	**7.12**	1.92	**2.67**
Total Emissions	**125.62**	**81.59**	**11.95**	4.12	**7.28**
Notes: Changed values are in bold					

ATTACHMENT AQ-9

PG&E Burney Sulfur Data and Summary Table

Five copies of Attachment AQ-9, PG&E Burney Sulfur Data and Summary Table were submitted to the California Energy Commission.

ATTACHMENT AQ-22

Emission Reduction Credit Certificates

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

Technical Area: Cultural Resources
CEC Author: Gary Reinoehl
WEC Authors: James C. Bard, Ph. D., Elizabeth Calvit

BACKGROUND

The AFC indicates that letters were sent on September 5, 2002, to the individuals and organizations provided by the Native American Heritage Commission requesting information on culturally sensitive areas. The AFC states that a summary of the results of consultations with the individual Native American organizations will be provided in a future filing. This information is part of the background investigations that are carried out to determine whether there are cultural resources that could be impacted by the project.

DATA REQUESTS

35. Please provide a summary of additional consultations made with Native American individuals and tribes documenting effort to identify cultural resources and Native American concerns regarding this project.

    Response: On Thursday February 6, 2003 at 2:10 PM, Jim Bard phoned Ms. Reba Fuller (209) 928-3475 and left a message with a secretary asking Ms. Fuller to reply. No reply was received as of February 20, 2003.

    On Thursday February 6, 2003 at 2:14 PM, Jim Bard phoned Ms. Katherine Erolinda Perez (209) 462-2680 and left a message with a family member. At 3:00 PM, Ms. Perez called Jim Bard and stated that she "set aside our letter because she has no concerns about the project."

36. Please provide a schedule for any additional meetings with Native Americans and submittal of summaries of the meetings or conversations.

    Response: No additional meetings have been requested by Ms. Perez. Ms. Fuller has not replied to Jim Bard's February 6th, phone call.

BACKGROUND

The Cultural Resources Management Report indicates that a complete general reconnaissance for architectural resources was performed by Dr. Bard, Mr. Sharpe, and Mr. McClintock with evaluation of architectural and historical significance being conducted by Ms. Calvit.

DATA REQUESTS

37. Please describe the methodology involved in a "complete general reconnaissance for architectural resources."

    Response: The general reconnaissance for the architectural resources was completed by inspecting all homes, farmsteads, commercial/industrial facilities and features

believed to be 50 years or older. Photographs were taken for all potential architectural resources within a one-half mile radius of the plant site and 100-feet on each side of the project linears. When possible, interviews were conducted of residents regarding properties believed to be within the time frame for inventory forms. If residents were home and allowed permission, photographs were taken of both the front and rear elevations of the property. Addresses were collected and added to the photo log for each property. This information was later used to collect tax parcel information and incorporated into the DPR 523 forms.

38. Please indicate if Ms. Clavit has viewed the actual buildings and structures that she evaluated or whether she has only seen photographs or other images of the buildings and structures.

Response: Ms. Calvit evaluated the buildings using documentation and photos provided to her.

BACKGROUND

Table 4 in the Cultural Resources Management Report provides a summary of the buildings and structures that were identified as being within the project area. The table includes the Assessors Parcel Number (APN) the name or address of the building/structure, the date of construction, and indicates whether the building/structures(s) were recommended as eligible or ineligible for the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR). When comparing the information provided in Table 4 with the DPR 523 forms, discrepancies were noted: some of the APNs and addresses in the table do not match those on the forms, 34 DPR forms were provided but only 30 resources are listed in the table, not all of the dates of construction in the table matched those noted on the forms.

DATA REQUEST

39. Please provide a table that accurately reflects all of the resources that were recorded correlating the APN and the address, dates of construction, and other relevant information.

Response: Table 4 has been revised to correct the discrepancies. Table 4R is presented below.

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

TABLE 4R
Historic Properties within the WEC Project Area (revised February 23, 2003)

APN No.	Street	Date of Construction	Not Evaluated	Appears Eligible	Appears Ineligible
044-02-14	5600 Clayton Road	1930			X
044-12-02	5519 Harding Road	1908			X
044-01-28	207 Holland Drive	1940			X
044-01-05	331 Holland Drive	1948			X
044-10-11	1037 Kilroy Road	Undetermined			X
044-15-02	2606 Linwood Avenue	1949			X
044-10-07	2719 Linwood Avenue	1925			X
044-13-06	3606 Linwood Avenue	1900			X
044-04-14	3613 Linwood Avenue	1967[A]			X
044-01-16	649 S. Commons Road	1920			X
044-02-08	818 S. Commons Road	1908			X
044-02-22	1230 S. Commons Road	1930			X
044-40-21	3700 S. Commons Road	1966[A]			X
044-40-24	4724 S. Commons Road	1914			X
044-04-16	825 South Tegner Road	1910			X
044-10-48	830 South Tegner Road	1937			X
044-01-12	715 Washington Road	1920			X
044-04-01	806 Washington Road	1935			X
044-02-11	1201 Washington Road	1925			X
044-04-02	1318 Washington Road	1947			X
089-10-07	3707 West Main Street	1910			X
044-03-02	3900 West Main Street	1908			X
089-10-10	4231 West Main Street	1915			X
089-10-16	4625 West Main Street	1961[A]			X
089-10-17	4631 West Main Street	1953			X
089-10-13	4713 West Main Street	Undetermined			X
023-40-07	4813 West Main Street	1911			X
044-01-08	5024 West Main Street	1956[A]			X
044-01-07	5118 West Main Street	1949			X
023-40-08	5213 West Main Street	1955			X
023-40-09	5437 West Main Street	1973			X
	Tidewater Southern RR	No date avail.			X
	Canal Lateral #5	1903		X (CRHR)	

[A] This property appears older than shown in the tax records.

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

BACKGROUND

The Cultural Resources Management Report contained DPR 523 forms for 34 resources. Some of the forms depict and describe the same building/structure but have different addresses: 1230 Commons Road and 5500 Commons Road; 207 Holland Drive and 331 Holland Drive; 3650 Commons Road and 3700 Commons Road; and 5600 Clayton Road and 5600 Commons Road at Clayton Road. If any of the parcels and associated buildings have more than one address, both addresses should appear on a single form that records the resource.

DATA REQUEST

40. Please review the DPR 523 forms for 1230 Commons Road, 5500 Commons Road, 207 Holland Drive, 331 Holland Drive; 3650 Commons Road, 3700 Commons Road, 5600 Clayton Road, and 5600 Commons Road at Clayton Road and provide DPR 523 forms for each of the resources.

    Response: Duplicate DPR 523 forms were incorrectly submitted in the AFC. DPR 523 forms that have been corrected per Data Request CUL-47 will be submitted by March 10, 2003.

BACKGROUND

Table 4 includes the Tidewater Southern Railroad and Canal Lateral No. 5 in the list of resources within the project area. The report includes a discussion of the two resources. The confidential appendix includes a copy of the site record for the Tidewater Southern Railroad outside of the project area. The discussion indicates that the resources have been evaluated by other specialists as not meeting the criteria for eligibility to the NRHP.

DATA REQUESTS

41. Please provide an update for the Tidewater Southern Railroad record that includes the portion of the resource that is within the project area.

    Response: The Applicant anticipates being able to respond to this data request by March 10, 2003.

42. Please indicate whether there has been concurrence by the California Office of Historic Preservation (CA SHPO) or a decision by an agency that determines the eligibility of each of these resources, and if so, identify that agency.

    Response: The Tidewater Southern Railway in San Joaquin County between Lathrop Road and Spreckels Road (in Manteca) has a NRHP Status Code of "5" (see Primary Record P-39-000015, previously submitted to the CEC). The Tidewater Southern Railway in Stanislaus County is described on Primary Record P-50-000083; its NRHP Status Code is unknown. CH2M HILL has no CA SHPO or other agency concurrence documentation in its possession.

43. If there has not been a concurrence by the California Office of Historic Preservation (CA SHPO) under federal regulations or a decision by an agency under CEQA, then please provide a full discussion of the eligibility of the resource, including a discussion of the character defining attributes of this resource type and the aspects of integrity.

Response: A DPR 523 form is being prepared and will be submitted to the CEC by March 10, 2003. The following is an excerpt from the DPR 523 form of the character-defining attributes of this resource.

> **Criteria A**: This segment of the Tidewater Southern Railroad branch evaluated for this project does not appear to meet the criteria for listing in the National Register nor does it appear to be a historical resource for the purposes of CEQA, primarily because of its loss of historic integrity with the replacement of the track in 1945 and the updating of the Washington Road crossing. Therefore the section under evaluation in this form does not appear to have the potential to be a contributor to any larger historic property, nor does the segment appear to meet the criteria individually.
>
> **Criteria B:** This property does not appear to be associated with any individuals who made significant contributions to national, state, or local history as required under Criterion B. This property does not convey any association with W.A. Irwin (Turlock townsite promoter) or any of the well-known historical figures associated with California's major railroads (e.g., Stanford, Crocker, etc).
>
> **Criteria C:** This property does not appear to be an important example of a type, period, or method of construction. No special engineering or construction techniques were known to be used in the construction of this segment of the railroad. Improvements and upgrades to this segment of the railroad have compromised the integrity.
>
> **Criteria D:** The railline is documented and does not appear to be a principal source of important information in this regard.
>
> This property has been evaluated in accordance with Section 15064.5(1)(2)-(3) of the CEQA Guidelines using the criteria outlined in Section 5024.1 of the California Public Resources Code. The property does not appear to meet the criteria for listing in California Register of Historical Places.
>
> Evaluated by Ms. Elizabeth D. Calvit, CH2M HILL. Secretary of the Interior-qualified Architectural Historian.

44. Please provide a DPR 523 record for Canal Lateral No. 5 that includes the portion of the resource within the project area.

Response: The Applicant anticipates being able to respond to this data request by March 10, 2003.

BACKGROUND

The Cultural Resources Management Report states that breaches of Lateral No.5 would not produce any permanent damage. It goes on to state that such a breach would not affect the resources eligibility for the NRHP or the CRHR because those types of operations do not diminish the historic values associated with historical canals. A breach of the canal would cause a loss of historic materials if the materials

removed were from the period of significance. The breach and repair of the canal would also constitute a change in workmanship from the period of significance. Whether a breach and repair of the canal would effect the canal would depend on the character defining elements, the manner in which the repair is completed, and how the character defining elements might be changed.

DATA REQUESTS

45. Please provide, as part of the DPR 523 requested in data request 44, the period of significance for Lateral No. 5, a discussion of the character defining attributes for the lateral as they were within the period of significance, the criteria under which the resource may be eligible, and a context within which the eligibility of the resource can be considered.

    Response: The Applicant anticipates being able to respond to this data request by March 10, 2003.

46. Please provide a discussion of various construction techniques for the crossing of Lateral No. 5, including breach and repair, jack and bore, and directional drilling, and the impacts of each technique on the resource and the justification of the preferred technique.

    Response: See Data Response #29 for a discussion of the construction techniques for the crossing of Lateral No. 5.

    Crossing Turlock Irrigation District's canal Lateral No. 5 using open cut construction (rather than trenchless construction) will not affect those qualities of this historic canal lateral that make it eligible or ineligible for inclusion in either the NRHP or CRHR. Open-cut construction through the canal lateral, once completed, will not affect operation of the canal lateral and will not produce any lasting visual traces of the open cut construction. Canal Lateral No. 5 is currently a concrete-lined feature. Once the cut has been opened, the natural gas pipeline installed, the cut restored, and the restored cut will be re-lined with concrete. Research of TID records revealed that this segment of canal Lateral No. 5, first concrete lined on or about March 11, 1935, has since undergone maintenance and repair.

    As an example of maintenance and repair that takes place over a typical decade, TID records show that the headwalls on both sides of this canal segment were patched in 1992. In addition, maintenance/repair work in 1992 included removal and replacement of a "buckle" on the north bank some 20 feet downstream from Commons Road. In 1998, cracks were patched and backfill added behind the concrete lining on the downstream side of Commons Road. In 1999, cracks and a hole in the bottom concrete linning was repaired 10 feet upstream from Commons Road on the north bank. In addition, in 1999, cracks were patched in the bottom of the concrete lining 150 feet downstream from Commons Road on the north bank. Each time this canal is repaired, fresh new concrete is applied - since 1935, little if any of the original concrete surface is still intact, or still visible due to concrete or grout 'overlays' on repaired areas.

As documented on the DPR 523 form prepared for canal Lateral No. 5, this canal lateral was originally completed between 1903 and 1904 and functioning by 1905. It was originally constructed as an open earth-excavated canal channel. Beginning in the 1920s, TID began a long-term program of canal improvement focused on installation of concrete lining that would improve water flow, reduce seepage, and eliminate costly maintenance. As also documented on the DPR 523 form, the period of significance for this canal and for the historic built environment in the TID Walnut Energy Center project area is 1905 to 1920. The historic context rationale is that from the standpoint of agriculture (the primary occupation of people that settled the Turlock Irrigation District project area west of Turlock), the years from 1905 to 1920 were ones of growth and development.

In 1903, the segment of canal Lateral #5 was completed at South Commons Road and by 1904/1905, canal Lateral No. 5 was completed and thus made irrigation agriculture and farm settlement possible south of Lateral #4 and east of the Ceres Main Canal. Using 1905 to 1920 as the period of significance effectively captures the important historical context of the historic built environment in the immediate project area. Buildings, farms, and associated outbuildings were constructed in direct response to the presence of Laterals # 4 and #5 (completed in 1903) and the sale of smaller (40-, 60-, and 80-acre) parcels to an influx of Swedes (Hohenthal 1972:72-86), and other ethnic groups such as the Portuguese (Hohenthal 1972:87-97), Assyrians (Hohenthal 1972:98-107); and Japanese (Hohenthal 1972:108-119) in response to targeted advertising and promotion by heirs of the Mitchell estate. Therefore, during the period of significance, canal Lateral No. 5 was an open earth canal - not a concrete-lined canal. It was not until 1935 that this canal segment attained its modern shape, size, and characteristic concrete lining. Maintenance and repair that have created a pastiche of concrete patches since 1935 have no bearing on the period of significance (1905-1920).

As documented on DPR 523, this segment of canal has lost its integrity of design (open earth canal) in 1935 when it was modified for concrete lining. The canal segment likely possesses integrity of location (it is essentially in the same location as originally constructed in 1903, though the earthen canal may have slightly altered course from season to season) but only shows minimal integrity of materials, and workmanship that dates from 1935 when it was concrete lined (e.g., continued repair and maintenance has resulted in cumulative loss of the original concrete lining and finishing). It retains some integrity of setting and feeling (although the original rural agricultural setting is now urbanizing with the addition of industrial and other business development the areas immediately adjacent to the canal are still characterized by irrigation agriculture), and maintains better integrity of association (it is still associated with the period of significance insofar as it is still canal Lateral No. 5 owned and operated by TID).

This canal segment does not appear to meet the criteria for listing in the National Register of Historic Places due to its loss of design integrity in 1935 when it was converted from an earthen canal to a modern concrete-lined canal and lack of

integrity of materials and workmanship (also due to concrete lining). While retention of some integrity of setting, feeling and association with the period of significance is demonstrated, this canal segment still does not convey clear association with significant trends in agriculture on a national level (Criterion A), or association with individuals that made a significant contribution to history at the local, state or national level (Criterion B). It is not an important example of a type or method of construction (Criterion C), and because of repeated repairs, it could not serve as a source of important information about historic canal construction or technology (Criterion D). As explained above, cut and repair of the concrete will not materially change the function and appearance of the 1935 (and subsequently repaired/maintained) canal.

This canal segment was evaluated in accordance with Subsections 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code. This historic property appears to meet one of the significance criteria as outlined in these guidelines. It appears that this canal segment could possibly be an important local example of fast-disappearing open canal works associated with the locally important Turlock Irrigation District (Criterion A). Until the late 1930s concrete lining predominated improvement work and even in 1939 to 1940 less than 20 miles of the 132 miles of improved community ditches had pipelines. In the 1944-1945 season, however, a short stretch of lining was torn out to make way for pipelining and the trend continued. By 1951, the improvement districts had more miles of pipeline than lining. In time, the ditches that had been such a prominent part of the local landscape disappeared from large sections of the TID, their former course marked only by the presence of relief standpipes and gate structures. Cut and repair of the concrete for the natural gas pipeline will still leave this segment of canal as an open canal; and the patch used to repair the cut will not affect the status of this open canal as an example of fast-disappearing open canal works associated with the TID.

BACKGROUND

A cultural resources survey report has been provided that provides the methodology of the surveys, the names of the staff performing the surveys, and the results of the surveys. The California Office of Historic Preservation provides instructions for completing the records (Department of Parks and Recreation Form 523) and the required fields that have to be completed. The DPR 523 forms included an evaluation of the resources. For many of the resources, only architecture is considered, not all of the criteria for eligibility. A historic context was not included on the form or in the report text to weigh the eligibility of the resources. In most cases there is a brief discussion of the integrity of the resource and a consideration is only given to one or two aspects of integrity, not all seven aspects of integrity.

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

DATA REQUESTS

47. Please provide a DPR 523A form for each of the resources that indicates the name of the individual who completed the form, and the company name.

    Response: The Applicant anticipates being able to respond to this data request by March 10, 2003.

48. Please provide a DPR 523B form that lists only the name of the individual who meets the Secretary of the Interior's Professional Standards for completing the evaluation per the requirements of the CA OHP. (Please ensure that the proper form designation is used in the footer.)

    Response: The Applicant anticipates being able to respond to this data request by March 10, 2003.

49. Please include a discussion of the seven aspects of integrity on the DPR 523 form for the resources that the evaluator believes has lost so much integrity that it would not be eligible for either the NRHP or the CRHR.

    Response: The Applicant anticipates being able to respond to this data request by March 10, 2003.

50. Please provide a context within which the eligibility of the resources are being considered per the California Office of Historic Preservation 1995 publication entitled *Instructions for Recording Historical Resources*.

    Response: The Applicant anticipates being able to respond to this data request by March 10, 2003.

51. Please provide a discussion of the eligibility under each of the criteria for the NRHP and the CRHR.

    Response: The Applicant anticipates being able to respond to this data request by March 10, 2003.

BACKGROUND

A Proposed Native American Burial Protection Program Plan is provided in the Cultural Resources Management Report and in an appendix to the AFC. The plan includes terminology that is not consistent with state law, suppositions about recommendations for treatment of human remains and grave related goods, and procedures that are not consistent with state laws.

DATA REQUEST

52. Please either revise the plan or indicate that the applicant is withdrawing the plan and will comply with state law.

    Response: The Applicant will withdraw Appendix 8.3B and will comply with state laws.

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

BACKGROUND

Cultural resources that are on lists created by local jurisdictions and could qualify as historical resources, and could be affected by the project, must be considered in the analysis. Staff needs the following information to complete the analysis.

DATA REQUESTS

53. Please provide copies of local lists of important cultural or historic resources designated by a local ordinance by the City of Turlock or Stanislaus County.

    Response: Following consultation/research with the Turlock Historical Society, Turlock Library, Turlock Irrigation District and residents who grew up near the project area, it was concluded that no known cultural resources will be affected by this project. The only known cultural or historic resources designated by a local ordinance by the City of Turlock or Sanislaus County are three parks in Turlock that include:

    - Donnelly Park, opened in 1974 and contains 40 acres.
    - Pedretti Park/Sports Complex, constructed in 1977 and provides recreational and sports facilities.

    Turlock Regional Sports Complex, opened in 2002 , remains under construction. At the present time it contains 14 soccer fields.

54. If any of these resources could be affected by the project or could have their immediate surroundings altered (change in the integrity of setting) by this project in such a manner that the significance of the historical resource would be materially impaired, then please provide a copy of the requirements used by the local jurisdictions to qualify for the listing.

    Response: No known cultural resources will be affected by this project.

55. If any of the historical resources could be affected by the project or could have their immediate surroundings altered (change in the integrity of setting) by this project in such a manner that the significance of the historical resource would be materially impaired, and they have not been recorded on a DPR 523 form, then please record such cultural resources on DPR 523 forms and provide a copy of the forms.

    Response: No known cultural resources will be affected by this project.

56. If any of the resources could be affected by the project or could have their immediate surroundings altered (change in the integrity of setting) by this project in such a manner that the significance of the historical resource would be materially impaired, please provide a discussion of the significance of the resources under CEQA Section 15064.5, (a), (3), (A)(B)(C) & (D) and provide staff with a copy of the assessment and the specialist's conclusions regarding significance.

Response: No known cultural resources will be affected by this project.

BACKGROUND

In some cases, local historical and archaeological societies have knowledge of cultural resources in an area of a project that may not be available through normal record sources. Staff needs the following information to complete the analysis.

DATA REQUESTS

57. Please inquire with any local historical and archaeological societies that might have knowledge of historical or archaeological resources in the area of the project. Please provide copies of the inquiry letters and any responses.

Response: Points of contact were investigated for historical and/or archaeological resource information for the TID project. These contacts were conducted by phone conversations, and research at the Turlock Public Library and the Turlock Irrigation District. Contacts are provided below:

Turlock Public Library
P.O. Box 1260
Ph. 209-664-8100
Turlock, CA.

Turlock Irrigation District
333 East Canal Drive
Ph. 209-883-8346
Turlock, CA.
Contact: Jeff Barton (civil engineer)

Turlock Historical Society
P.O. Box 18
Ph. 209-634-5219
Turlock, CA.
(point of contact Christen Santos)

Turlock School District
207-667-0632

County Office of Education
209-525-4900

Mary Ann Gallmeyer (librarian)
Stanislaus County Free Library
Ph.209-558-7800
Modesto, CA.

Bob Reed (administrator of the Moose Lodge)
Turlock, CA.

James Johnson (grew up about ½ mile west of the Moose Lodge beginning in 1939).

Ivan Iowe (grew up near the project area).

58. If any such resources are identified that could be affected by the project or could have their immediate surroundings altered (change in the integrity of the setting) by this project in such a manner that the significance of the historical resource would be materially impaired, and they have not been recorded on a DPR 523 form, then please record the cultural resources on the DPR 523 form and provide a copy of the form.

Response: No known cultural resources will be affected by this project.

59. If any of the resources could be affected by the project or could have their immediate surroundings altered (change in the integrity of setting) by this project in such a manner that the significance of the historical resource would be materially impaired, please provide a discussion of the significance of the resources under CEQA Section 15064.5(a), (3), (A)(B)(C) and (D) and provide staff with a copy of the assessment and the specialist's conclusions regarding the significance.

Response: No known cultural resources will be affected by this project.

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

Technical Area: Geology and Paleontology
CEC Author: Dal Hunter, Ph.D., C.E.G.
WEC Authors: Tom Lae, and Lanny Fisk

BACKGROUND

Section 8.15.6 of the AFC states that no permits are required for geological LORS; however, the City of Turlock does require grading permits for construction projects within city limits. Stanislaus County also requires grading permits for construction projects lying outside the boundaries of recognized municipalities.

DATA REQUEST

61. Please provide permit requirements for the City of Turlock and Stanislaus County.

Response: Per further conversations with the City of Turlock, and Stanislaus County the Applicant's data response for GEO-61, submitted on February 17, 2003, should be updated as follows:

Stanislaus County requires a grading permit for any excavation or trenching activities. Spoils may be used for backfill in areas that are constructed outside of City or County right-of-ways. If work is performed within the road right-of-ways, spoils must be hauled off and cannot be used as backfill. Backfill within the road right-of-ways must be A/B material, and no net changes to the existing grading/drainage patterns can occur after trenching. Cut/fill calculations will determine the permit fees.

Table GEO-61 below shows the contacts for both the City of Turlock and Stanislaus County. (The Applicant notes that grading permits are among the types of local permits superceded by the Commission's exclusive siting jurisdiction, per Public Resources Code 25000 et seq.)

TABLE GEO-61
Permits

Permit	Department	Contact	Schedule
Grading	City of Turlock Engineering Department	Brad Cohen (209) 668 5520	Approximately 30 days prior to grading for application and final grading design review.
Grading	Stanislaus County, Department of Public Works	Mike Luevano (209) 525-6550	Approximately 30 days prior to grading for application and final grading design review.

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WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

Technical Area: Visual Resources
CEC Author: Eric Knight and William Walters
WEC Authors: Wendy Haydon, Jim McLucas, and Gary Rubenstein

BACKGROUND

The visual simulations provided in the AFC do not appear to accurately depict the size of the various project structures relative to each other, or the scale or location of the power plant relative to the various key observation points (KOPs). According to Table 8.11-2 and the elevation views (Figures 2.2-2a and 2.2-2b) provided in the AFC, the HRSG units, not including the highest drums and relief valves, are approximately half as tall as the HRSG stacks (65 feet and 132 feet tall, respectively). The simulations for KOPs 2, 4, and 5 do not accurately depict the size of these structures relative to each other (i.e., the HRSGs appear to be much less than half the size of the stacks). In KOP 2, the project does not appear to be in the correct position relative to the Foster Farms silos. It seems that the project should be located to the left somewhat. In addition, the base of the project is simulated too close to the KOP, when in reality it would appear farther away than the base of the Foster Farms facility. In KOP 3, the project structures appear to be placed too far to the right in the simulation. The cooling tower is not shown in the simulation for KOP 4, which would seem to be visible from this location. Also, some of the new project structures (which are assumed to be the 69 kV transmission poles) appear to be protruding from behind one of the agricultural-related industrial facilities to the east of the project site, which is not consistent with the site plans. KOPs 4 and 5 are essentially the same distance from the project site, yet the project appears much larger in the simulation for KOP 5 than it does in KOP 4.

DATA REQUEST

73. Please revise the simulations for KOP 1, 2, 3, 4 and 5, so they accurately represent the size of the various project structures relative to each other, and the scale and location of the project relative to the KOPs and existing structures and features in the view.

    Response: Simulations for KOPs 1, 4, and 5 have been revised, as requested, and are provided as Figures 8.11-9bR, 8.11-12bR, and 8.11-13bR. They accurately represent the size of the various project structures relative to each other, and the scale and location of the project relative to the KOPs and existing structures and features in the view. The visual simulation of KOP 3 has not been completed and will be provided by March 10, 2003.

    KOP 2 has been replaced with KOP 2A, pursuant to Data Request #75. Because it has been replaced by KOP 2A, KOP 2 (Figure 8.11-10b) was not revised.

74. Please provide high quality 11" x 17" color photocopies of the visual simulations. The images need to be presented at "life-size" scale, when held at a normal reading distance of 18 inches. Please also provide high resolution electronic copies of these images.

Response: Color photocopies of 11 x 17s of the simulations for KOPs 1, 4, and 5 are attached as Figures 8.11-9bR, 8.11-12bR, and 8.11-13bR. A color photocopy of KOP 3 will be provided on March 10, 2003. With the completion of KOP 3 on March 10, 2003, electronic files of the visual simulations will be provided on a CD-ROM.

BACKGROUND

KOP 2 was selected to represent both the views of residences and travelers along West Main Street. The photograph shown in AFC Figure 8.11-10a was taken from the property located at 4813 West Main Street. The photograph depicts a view more representative of the residence than a worst-case view that eastbound travelers on West Main Street would have as they stop at the intersection of West Main Street and Washington Road. As shown in the photo simulation (Figure 8.11-10b), from the residence, the power plant is partially obscured by the stop sign and utility pole in the foreground of the view. However, the sign and pole would not obstruct the view of vehicles stopped at the intersection. According to the AFC, the Turlock General Plan designates West Main Street as a "Gateway Route," and requires design review of projects within view of such roadways. As reported in the AFC, West Main Street has a traffic volume of 7,425 vehicles per day. In addition, the entire project is not shown in the simulation (i.e., a portion of the cooling tower is cropped).

DATA REQUEST

75. Please take a new photograph and prepare a new simulation for KOP 2 that would show the existing view of the site and the entire project as seen by a driver in the eastbound lane of West Main Street, stopped at the intersection with Washington Road.

Response: KOP 2 was originally intended to represent only the residential view of the project site. At CEC Staff's request, during the site visit, Staff indicated that the KOP 2 could be considered to be both a residential and traveler view; therefore, it was characterized as representing both views in the AFC submittal. However, a new photo has been taken that will be called KOP 2A. It is provided as Figure 8.11-14a. This figure will be included in the CD-ROM.

76. Please provide high quality 11" x 17" color photocopies of the existing conditions photograph and visual simulation. The images need to be presented at "life-size" scale, when held at a normal reading distance of 18 inches. Please also provide high resolution electronic copies of these images.

Response: An 11 x 17 simulation of the view from KOP 2A has been prepared and is provided as Figure 8.11-14b. It depicts the view of the project as seen by a driver traveling eastbound on W. Main Street, near the Washington Road intersection. This figure will be included on the CD-ROM.

BACKGROUND

AFC Page 8.11-12 (section 8.11.3.3.3) states that TID only proposes to install landscaping at the project site entrance, and not around the entire perimeter of the site. The AFC further states that the "cropped agricultural land [adjacent to the site] would serve as a *partial* buffer to the Ruble Road residences to the south of the project site because it would not screen all project facilities from view" (emphasis added). Tables 8.11-4 and 8.11-5 in the Visual Resources section of the AFC identify several General Plan policies and a Zoning Ordinance requirement addressing the issue of *increasing* the compatibility of industrial and abutting residential uses, and *minimizing* impacts adversely affecting residential uses in relation to visual quality. In the discussion of the project's conformance with the Industry Implementing Policy 2.5-i, the AFC states that "TID proposes to buffer the project on its southern side from the nearby residences on Ruble Road by landscaping." This statement conflicts with the discussion in section 8.11.3.3.3 that states that no landscaping is proposed for the site perimeter.

DATA REQUEST

77. Please clarify how the project site would be landscaped.

Response: The discussion on AFC page 8.11-12, Section 8.11.3.3.3 regarding project landscaping is correct. The discussion of the project's conformance with Industry Implementing Policy 2.5-I is not. TID does not propose landscaping along the southern perimeter of the project site, since it is not required by the City of Turlock and would be incompatible and out of character with the area. TID does intend to landscape the entrance to the project site on South Washington Road.

78. If landscaping would not be provided on the southern perimeter of the site, please explain how the project would fully comply with General Plan Policies 2.5-h and 2.5-i, and Zoning Ordinance 9-2-109(a)(2).

Response: Below is a discussion of the project's compliance with General Plan Policies 2.5-h and 2.5i, and Zoning Ordinance 9-2-109(a)(2).

Policy 2.5-h

Policy 2.5-h states in part, that industrial development should be designed to "minimize potential community impacts adversely affecting residential and commercial areas in relation to …visual quality…" The design of the WEC project is consistent with this policy. First as stated in the AFC, the site location is consistent with the surrounding land uses, thus maintaining the visual quality of the area. Specifically, TID chose to locate the site at the eastern end of the 69 acre parcel so that the project features would

be parallel to and blend in with the tall structures of the adjacent Foster Farms facility. In addition, the HRSG stacks were located back to back, again so they would be in-line with the tall structures of the Foster Farms facility. These design features provide consistency with the existing industrial development in the project area and with Policy 2.5-h since the project will not change the visual quality in the area.

Policy 2.5-i

Policy 2.5-i states: "Buffer industrial and heavy commercial areas from adjacent residential, commercial, and recreation areas." The intent of the policy is not to have industrial areas immediately abut a residential neighborhood[1]. In the case of the WEC project, it is located in an industrial zoned area within the City of Turlock. The existing residences along Ruble Road near the WEC site are located within the City's Planning Area. As such they are considered "transitional uses' by the City, which will eventually give way to industrial development[2].

In addition, the distance between the fenceline on the south side of the WEC project site to the southern property line of the 69 acre parcel is approximately 220 feet. This distance provides a buffer between the WEC project and the residences at the end of Ruble Road.

Zoning Ordinance 9-2-109(a)(2)

The City's purpose and intent of Zoning Ordinance 9-2-109(a)(2) is to establish landscaping regulations that are intended to "increase the compatibility between residential and abutting commercial and industrial uses." As stated above, the City considers the residences along Ruble Road near the WEC site transitional uses which will eventually give way to industrial development. Specifically, Policy 2.10-a of the City's General Plan, states:

Ensure the City's ability to accommodate future urban growth and development, particularly industrial and commercial uses to the west and south, beyond the 2012 time horizon of the General Plan.

The City eventually intends to expand its industrial area to the west and south of the project site. Therefore the residential uses will give way to industrial development.

The existing industrial development in the project area is not landscaped or screened. To require landscaping or screening of the project site would be incompatible and out of character with the surrounding area.

79. Please provide a conceptual landscape plan (at a scale of 1" = 40') depicting the plants proposed to screen the project and enhance the visual quality of the site consistent with the requirements of the Turlock General Plan and Zoning

[1] McGarry, Dana. 2003. Senior Planner, City of Turlock Community Development Services. Personal communication with Susan Strachan on January 24.
[2] *ibid*

Ordinance. The plan should describe the type and number of plants to be installed and their sizes at the time of planting. The plan should also describe the growth rate and times to maturity of the plant species selected, as well as their height at 5 years and at maturity.

Response: TID does not intend to screen the project nor is it required by the City of Turlock. The project site is located in an area zoned industrial by the City of Turlock. The existing industrial facilities in the area are not screened and it would not fit the industrial character of the area.

BACKGROUND

Table 8.11-5 identifies Zoning Ordinance 9-2-118 (Screening of mechanical equipment) as applicable to the project. This provision requires that exterior mechanical equipment be screened from view on all sides. Equipment to be screened includes, but is not limited to, heating, air conditioning, refrigeration equipment, plumbing lines, duct work, and transformers. The consistency discussion in the AFC states that slats in the surrounding chain link fence will screen mechanical equipment. However, the fencing would not screen the mechanical equipment and appurtenances (piping, steam drums, relief valves, and vent silencers) located at the top of the HRSG units, for instance, which would be most visible from the nearby residences on Ruble Road. These project elements would appear to be similar in character to the equipment (e.g. duct work and plumbing lines) identified in the ordinance required to be screened. Section 8.11.7.6 (Summary of Project's Conformity with Applicable LORS) states that "[a]lthough the mechanical equipment associated with the project would not be completely screened from view, it would be screened to the degree that it is feasible." No screening measures other than fencing are discussed.

DATA REQUEST

80. Please provide a detailed discussion on the feasibility and need of screening the project's mechanical equipment (such as the top works on the HRSGs) with architectural panels, steel mesh, louvers, or other screening techniques.

Response: The City of Turlock states that Zoning Ordinance 9-2-118 is intended for facilities such as automobile wrecking and storage, industrial subdivisions, and outdoor storage (non-vehicular), not facilities such as the WEC[3]. Aesthetic treatment of the mechanical equipment such as the top works of the HRSG is inappropriate and unnecessary since it would not fit the industrial character of the area. These screening techniques are used in areas where the visibility of a power plant is incongruent with the surrounding area. This is not the case of the WEC project. The project site is located in an area zoned industrial. Existing industrial facilities are not screened by landscaping nor are there mechanical equipment screened by architectural treatments.

[3] McGarry, Dana. 2003. Senior Planner, City of Turlock Community Development Services. Personal communication to Susan Strachan on January 24 and February 19 (email).

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

BACKGROUND

Staff plans to perform a plume modeling analysis for the cooling tower. Staff needs additional project data to complete this analysis.

DATA REQUEST

81. Please summarize for the cooling tower the conditions that affect vapor plume formation, including cooling tower heat rejection, exhaust temperature, and exhaust mass flow rate. These values should account for a range of ambient conditions in order to model a reasonable worst-case operating scenario. For example, ambient conditions from the turbine emissions and operating parameters of AFC Appendix 8.1-A are provided in the table below; however a similar, alternative range of conditions may be provided in the response. Please provide values to complete the table.

    Additional combinations of temperature and relative humidity, if provided by the applicant, will be used to more accurately represent the cooling tower exhaust conditions

Parameter	**Cooling Tower Exhausts**		
Number Of Cells	5 Cells (in 1 x 5 array)		
Cell Height*	17.07 meters (56 feet)		
Cell Diameter*	11.338 meters (37.2 feet)		
Tower Housing Length*	82.6 meters (271 feet)		
Tower Housing Width*	16.8 meters (55 feet)		
Ambient Temperature	32°F	61°F	97°F
Ambient Relative Humidity	90 %	59 %	26 %
Heat Rejection (MW/hr)			
Exhaust Temperature (°F)			
Exhaust Flow Rate (lb/hr)			

*Stack dimensions from air quality modeling file Turl_03.dat. Tower length and width are from AFC Table 8.11-2.

Response: The requested data have been added to Table VIS81-1 below.

TABLE VIS81- 1
Cooling Tower Conditions

Parameter	Cooling Tower Exhausts		
Number Of Cells	5 Cells (in 1 x 5 array) (4 fans in service at 32°F design point)		
Cell Height	17.07 meters (56 feet)		
Cell Diameter	11.338 meters (37.2 feet)		
Tower Housing Length	82.6 meters (271 feet)		
Tower Housing Width	16.8 meters (55 feet)		
Ambient Temperature	32°F	61°F	97°F
Ambient Relative Humidity	90 %	59 %	26 %
Heat Rejection (MMBtu/hr)	671.0	650.5	640.2
Exhaust Temperature (°F)	71.3°F	78.7°F	89.6°F
Exhaust Flow Rate (lb/hr) (wet)	28,934,340	35,571,540	34,892,340

82. Please indicate if the cooling tower has any plume mitigation features that would reduce the exhaust moisture content, which will otherwise be assumed to be saturated.

Response: The cooling tower proposed for the WEC project does not include any plume mitigation features.

83. Please provide a fogging frequency curve from the anticipated cooling tower vendor, if available.

Response: As an example, WEC has obtained, from the Marley Cooling Tower Company, a fogging frequency curve for the anticipated cooling tower design. Marley is one potential supplier of the cooling tower for this project. This fogging frequency curve was accompanied by the following caveats from Marley:

> "This curve enables one to determine whether the tower will plume at any set of ambient air conditions, consisting of wet bulb temperature and corresponding relative humidity. As described in the legend (small print), the curve separates entering cooling tower conditions that produce fog (plume) at the tower discharge -- above and left of the line -- from those that do not produce fog, below and right of the line. Entering conditions that fall on the line would result in a tower plume that would dissipate within 2-3 fan stack diameters from the top-of-stack (discharge) elevation. Similarly, conditions that fall deeper into the fogging zone above & left of the line would be characterized by a more intense & larger plume, while those conditions that are deeper into the non-fogging region may produce only wisps from the tower discharge that quickly dissipate. The size and intensity of the tower plume not only depends on the entering ambient

air conditions, but also on the applied heat load. Note that this curve is drawn for the design heat load conditions."

Thus, this curve represents the potential for visible plume formation only at design heat load conditions, which are based on plant performance for the average temperature day. WEC does not have fogging frequency curves for any other design conditions.

The requested curve is shown in Attachment VIS-83.

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

INSERT

11 x 17 VISUAL SIMULATIONS:

FIGURE 8.11-9bR

FIGURE 8.11-12bR

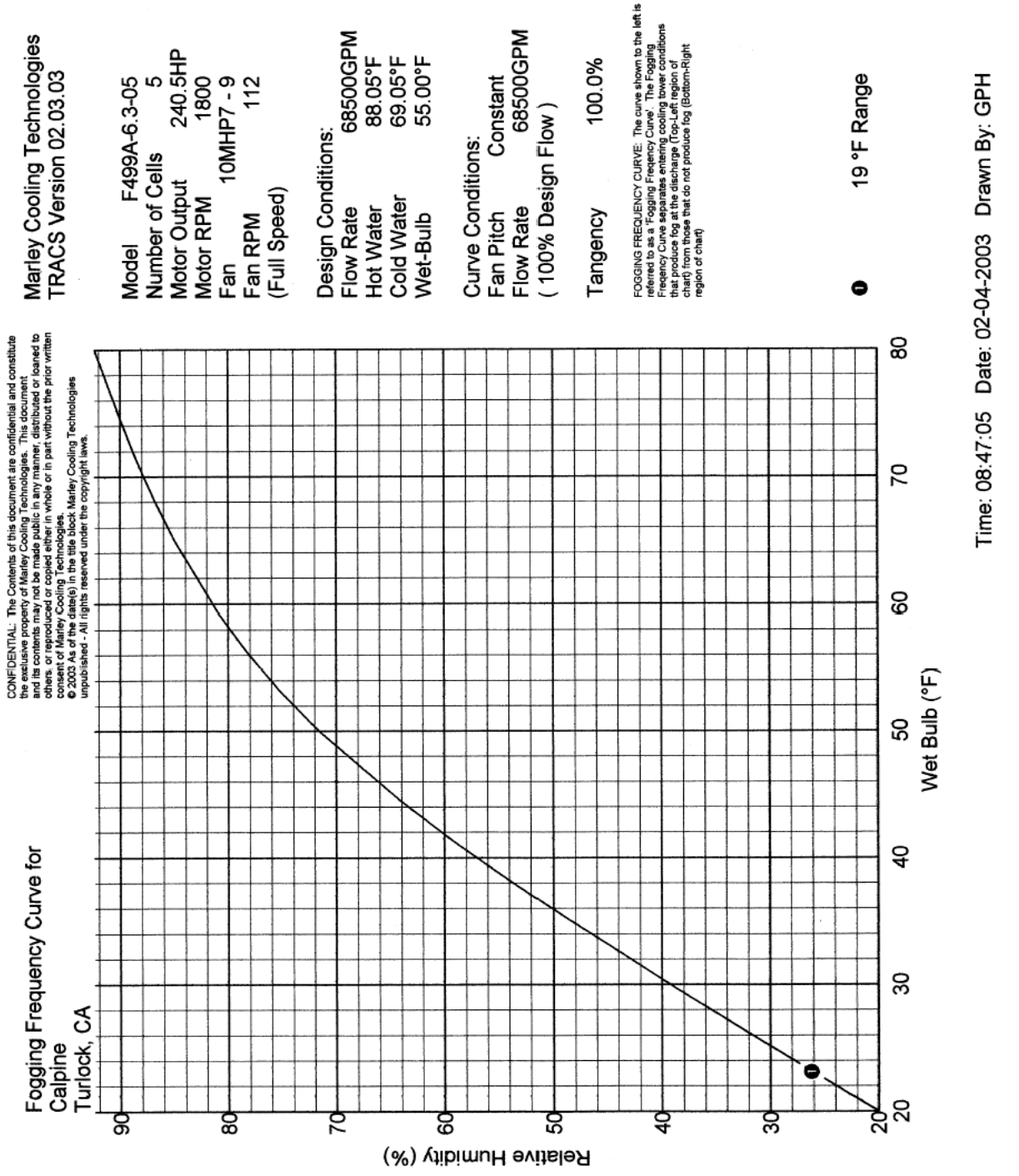
FIGURE 8.11-13bR

FIGURE 8.11-14a

FIGURE 8.11-14b

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

ATTACHMENT VIS-83



WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

Technical Area: Soil and Water Resources
CEC Author: M. Lorraine White
WEC Authors: EJ Koford

BACKGROUND

Construction and operation of the Turlock Irrigation District's Walnut Energy Center (WEC) may induce water and wind erosion at the power plant site and along its linear facilities. The applicant proposes to locate the power plant on 18 acres within a 69-acre parcel. The remaining 51 acres of the site will be used for construction laydown and site access. The site is surrounded by agricultural, residential and utility uses. An Erosion and Sediment Control Plan is needed addressing construction activities at the power plant site, the laydown area and any associated linear or other facilities, such as transmission lines, pipelines, and staging/storage areas. The purpose of the plan is to minimize the area disturbed, to protect disturbed and sensitive areas, to retain sediment on-site and to minimize off-site effects of water and wind erosion.

Storm water runoff may come in contact with contaminants during construction and operation of the project. A Storm Water Pollution Prevention Plan (SWPPP) will be necessary, addressing how drainage into the onsite stormwater pond(s) (AFC, p. 8.14-16) will be monitored for contaminants before allowing water to percolate into the ground. Currently, storm water that falls at the site naturally percolates into the soils. According to Section 8.14.5 of the AFC, the site's storm water will drain into an onsite stormwater percolation pond via a system of pipes, drains and swales in accordance with the City of Turlock's Specifications and Design Standards. According to the AFC the pond(s) will be designed to contain approximately 2 acre-feet of stormwater runoff (p. 8.14-17).

DATA REQUESTS

84. Please provide a draft Erosion and Sedimentation Control Plan that identifies all measures that will be implemented at various locations of the project during construction and operation of the proposed WEC. The plan must address the plant site, construction laydown area and all ancillary facilities.

    a. The draft Erosion and Sedimentation Control Plan must identify all permanent and temporary BMPs in written form and depicted on a construction drawing(s) of appropriate scale to be employed to control water and wind related erosion and offsite sedimentation during construction and operation.

    b. Any measures necessary to address federal or regional permits (i.e., Nationwide Permits, Streambed Alteration Agreements, or 401 Certification) as required, should be identified.

c. The plan must also identify maintenance and monitoring efforts for all erosion control measures.

d. This plan must be consistent with the Erosion Control and Revegetation Plan as specified in the Biological Resource Mitigation Implementation and Monitoring Plan and the proposed Grading Plan.

e. Please provide representative profiles and cross sections of areas that will be cut and filled, in relation to the proposed conceptual location of BMP's for erosion control during construction.

f. Please provide a discussion of all assumptions, calculations, measures, and any other data or information that demonstrates the proposed plan will conform with the City of Turlock's Specifications and Design Standards.

Response:

a.-d. The ECP is included in the SWPPP for the site and will be provided on March 10, 2003.

e. The locations of BMPs for erosion control during construction are identified in Figure SW-84a-1. This figure also shows the locations of two section cuts for cross sections shown in SW-84e-1. These cross sections show the existing grade and final post-construction grade.

f. Title 7, Public Works, Chapter 4, Excavations, Article 100 of the Turlock Municipal Code was amended to include Erosion and Sediment Control. This was accomplished with City Ordinance No. 981-CS. The proposed Draft Erosion and Sediment Control Plan (Draft E&SCP) will conform to the City of Turlock Municipal code as amended. The Code requires implementation of an interim and final sediment and erosion control plan. The Code requires that the plans not cause erosion or flooding of any natural drainage. Because the 69-acre site, on which the grading will occur, has no natural offsite drainage, this condition will be met. Additionally, the Draft E&SCPs will implement the use of a berm, located around the entire site, to eliminate offsite drainage.

The Draft (construction) E&SCP will use the natural slope of the site to drain stormwater toward the southwest corner of the site, where it will be allowed to pond during heavy rainfall and percolate into the ground. The Final E&SCP will use this same method to dispose of rainfall on the unused portion of the 69-acre parcel. The developed portion of the parcel (plant site) will include a sediment basin (storm water pond) to detain runoff and allow storm water to percolate into the ground. The use of sediment basins is a key component of the City Code. The implementation of the berm combined with the sediment pond will provide an effective way to manage sediment within the 69-acre parcel, both during construction and operation.

Figure SW-84f-1 represents the draft surfacing plan for the WEC site. This plan indicates that all plant surfaces will be treated, either with a hard surface (i.e. asphalt or concrete), gravel, or hydroseeding. Sizing calculations for the storm water pond are included as Attachment SW-84f-1. Calculations are provided for both the pre-construction and post-construction conditions. The post-construction calculations are based on the surface areas shown in Figure SW-84f-1. As indicated in Section 8.14.5.2 of the AFC, the storm water pond is designed for a rainfall of 3 inches per the City of Turlock requirements. As indicated in AFC Table 8.14-7, this is approximately equivalent to the 100-year, 24-hour design storm event.

85. Please provide a draft Storm Water Pollution Prevention Plan (SWPPP) consistent with the requirements for a General Storm Water Construction Activity Permit for the proposed WEC.

a. The draft SWPPP shall identify all permanent and temporary BMPs in written form and depict conceptual locations in order to prevent or avoid contamination of stormwater.

b. The draft plan should also address the RWQCB's comments as applicable.

c. Various contaminant sources will be present at the site. Various chemicals used during operation, chemical cleaning and washwater wastes (containing high concentrations of metals) and other contaminants will be stored onsite, some in potable tanks or sumps (AFC, p. 2-14). Please show possible storage locations at the site and specify appropriate BMPs that will be used to prevent spills or leaks of contaminants and measures to be employed in the event of such an occurrence. Specifically address how stormwater that has come into contact with any contaminated materials will be collected, treated, and discharged.

d. Please discuss the design storm that will be used to calculate additional capacity required in the contained areas surrounding outside chemical storage areas (see Appendix 10F, pg. APP 10F-3).

e. During construction, it is possible that groundwater will be encountered (APP 10G-5). Please discuss dewatering activities/techniques that may be needed, including disposal of associated water.

f. Please address how any contaminated soil or groundwater that may be excavated or encountered during construction will be collected, treated, and discharged.

g. Please discuss the anticipated water quality of wastewater discharged during hydrostatic testing, anticipated disposal of this waste stream and any appropriate BMPs to ensure no discharge of contaminants to surface or groundwater will result from hydrostatic testing (p. 25 of Data Adequacy Response WR-5). Please confirm that there will be no offsite disposal of construction wastewater including hydrostatic testing wastewater.

Response:

a. The draft SWPPP for the site will be provided on March 10, 2003

b. The draft SWPPP will be revised to respond to RWQCB comments as they are available. No comments have been received at this time.

c. The possible chemical storage locations and BMPs for hazardous material storage during the construction phase are shown in Figure SW-85c-1. Although Data Request 85 pertains to the General Storm Water Construction Activity Permit, Item (c) also requests that the locations of various chemicals used during operation and chemical cleaning, wash water wastes, and other contaminants be identified. Table SW85c-1 is a reproduction of AFC Table 8.12-3, which identifies the storage locations of hazardous materials, including those that may be used for HRSG chemical cleaning during the commissioning phase of construction. A code letter has been added in brackets following each storage location description. These code letters identify general locations on Figure SW-85c-1 where the hazardous materials will be stored. Table SW-85c-1 also contains three corrections to AFC Table 8.12-3; 1) the Storage Location for anhydrous ammonia has been revised to agree with AFC Figure 2.2-1, and 2) the State for anhydrous ammonia has been revised to "Liquid/gas," reflecting the fact that both phases will exist in the ammonia storage tank, and 3) the use for phosphonate has been revised to read "cooling tower corrosion inhibitor".

Permanent hazardous material storage areas will be provided with secondary containment meeting the requirements of Article 80 of the Uniform Fire Code. Chemical cleaning wastes associated with the initial cleaning of the HRSGs following construction, and periodic cleaning during operation, will be contained in temporary tanks provided by the chemical cleaning contractor. These tanks will be located on the paved area adjacent to each HRSG (designation [A] in Figure SW85c-1). During chemical cleaning operations, 24-hour supervision will be provided for visual detection of leaks or spills. Supplies of absorbent material will be maintained onsite for spill cleanup. Stormwater that falls in the containment areas will be discharged to the plant process drain system and recycled to the cooling tower basin. There will be no offsite discharge of stormwater.

d. As indicated in AFC Section 8.12.8.2.3 for sulfuric acid storage, and Section 8.12.8.2.4 for sodium hypochlorite storage, secondary containment areas for hazardous materials, which are located outdoors and not protected from rainfall, shall be designed to contain the volume of the tank contents (largest single tank if multiple tanks share a common containment area) plus the rainfall associated with the 25-year, 24-hour storm (2.41 inches per AFC Table 8.14-7). These secondary containment requirements are in accordance with Article 80 of the Uniform Fire Code.

e. During construction, dewatering may be required to construct certain underground features. The need to dewater will depend on the design depth of the underground improvements, and the depth of groundwater at the time of construction.

Dewatering may include an individual shallow well or a series of shallow wells installed near the perimeter of the work area. The wells would include small submersible pumps used to lower the localized water table for construction. Dewatering may also include pumps located within an excavation that is set below the excavation level. This will allow the water table to be lowered locally, within the excavation, to an appropriate level. Discharge piping will be run individually or connect to a common header pipe discharging to a location where the water may percolate back into the ground.

The on-site storm water pond will be used as the percolation pond for dewatering activities unless the hydraulic gradient between the water level in the pond and the excavation level does not allow for proper dewatering. If this occurs, then a temporary percolation pond will be constructed within the temporary construction area.

f. Contaminated soil or groundwater that may be encountered will be addressed within the draft SWPPP. The draft SWPPP will be submitted March 10, 2003.

g: The quality of the wastewater resulting from hydrostatic testing and flushing activities will be chemically similar to the source water, but will additionally contain dirt and debris flushed from the tank or pipeline. The Applicant's intent is that the potable water, recycled water, and gas pipelines all be flushed toward the WEC site. All wastewater resulting from hydrostatic testing or flushing of the linear pipelines, as well as in-plant pipelines and tanks, will be disposed of in the on-site storm water pond and allowed to percolated into the ground. Dirt and debris will be captured in the storm water pond. Since the source water will either be on-site well water, potable water, or recycled water, all of a quality similar or better than the shallow groundwater, the percolated water will not adversely impact the quality of the shallow groundwater. BMPs applicable to these activities include WM-10 for management of the wastewater, and WM-5 for disposal of any debris collected in the storm water pond (ref. Data Response #84). There will be no off-site disposal of wastewater from project hydrostatic testing or flushing activities.

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

TABLE SW85C-1
Use and Location of Hazardous Materials

Chemical	Use	Storage Location[1]	State	Type of Storage
Ammonium Bifluoride	Cleaning of HRSG, initial startup and once every 3 to 5 years	Outside, near each HRSG, [A]	Solid Crystals	Initial startup and periodically onsite
Anhydrous Ammonia (99% NH_3)	Control oxides of nitrogen (NO_x) emissions through selective catalytic reduction	Outside, northwest of STG, [B]	Liquid/Gas	Continuously onsite
Anti-Foam (e.g., NALCO 71 D5 ANTIFOAM)	Brine concentrator to control foaming	Water treatment building, [C]	Liquid	Continuously onsite
Antifreeze	Closed loop cooling systems	Water treatment building, [C][2]	Liquid	Continuously onsite
Calcium Sulfate	Brine concentrator initial startup seeding	Water treatment building, [C]	Solid	Initial startup and periodically onsite
Chelating Agents (EDTA)	Brine concentrator cleaner	Water treatment building, [C]	Liquid	Continuously onsite
Citric Acid	Cleaning of HRSG, initial startup and once every 3 to 5 years	Outside, near each HRSG, [A]	Solid Powder	Initial startup and periodically onsite
Cleaning chemicals/detergents	Periodic cleaning of HRSG and combustion turbine	Water treatment building and maintenance shop, [C, D][3]	Liquid	Continuously onsite
Diesel No. 2	Fuel for fire pump engine/vehicles	Near fire pump, [E]	Liquid	Continuously onsite
Formic Acid	Cleaning of HRSG	Outside, near each HRSG, [A]	Liquid	Prior to initial startup
Hydraulic Oil	High-pressure combustion turbine starting system, turbine control valve actuators	Contained within equipment, [F]	Liquid	Continuously onsite
Hydrochloric Acid	Cleaning of HRSG, initial startup and once every 3 to 5 years; small quantity kept onsite for maintenance	Water treatment building and outside, near each HRSG, [A, C]	Liquid	Initial startup and periodically onsite; small quantity continuously onsite
Hydroxyacetic Acid	Cleaning of HRSG; small quantity kept onsite for maintenance	Water treatment building and outside, near each HRSG, [A, C]	Solid Crystals	Prior to initial startup; small quantity continuously onsite
Laboratory Reagents	Water/wastewater laboratory analysis	Cycle chemical feed building, [G]	Liquid and Granular Solid	Continuously onsite

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

TABLE SW85C-1
Use and Location of Hazardous Materials

Chemical	Use	Storage Location[1]	State	Type of Storage
Lubrication Oil	Lubricate rotating equipment (e.g., gas turbine and steam turbine bearings)	Contained within equipment, [F]	Liquid	Continuously onsite
Mineral Insulating Oil	Transformers/switchyard	Contained within transformers and circuit breakers, [H, I]	Liquid	Continuously onsite
Neutralizing Amines (e.g., NALCO 356)	Corrosion control of condensate piping	Cycle chemical feed building, [G]	Liquid	Continuously onsite
Non-Oxidizing Biocide (e.g., NALCO 7330)	Cooling tower biological control, used periodically	Cooling tower chemical feed area, [J]	Liquid	Continuously onsite
Oxygen Scavenger (e.g., NALCO ELIMIN-OX)	Oxygen scavenger for use in process feedwater to deaerator	Cycle chemical feed building, [G]	Liquid	Continuously onsite
Phosphonate (e.g., NALCO 7385)	Cooling tower corrosion inhibitor	Cooling tower chemical feed area, [J]	Liquid	Continuously onsite
Scale Inhibitor (Polyacrylate)	Cooling tower scale inhibitor	Cooling tower chemical feed area, [J}	Liquid	Continuously onsite
Sodium Bromide	Cooling tower biocide	Cooling tower chemical feed area, [J]	Liquid	Continuously onsite
Sodium Carbonate	Cleaning of HRSG, initial startup and once every 3 to 5 years	Outside, near each HRSG, [A]	Solid Powder	Initial startup and periodically onsite
Sodium Hypochlorite (NaOHCl)	Biocide for circulating water system and process water pretreatment	Cooling tower chemical feed area and water treatment building, [C, J]	Liquid	Continuously onsite
Sodium Nitrate	Cleaning of HRSG, initial startup and once every 3 to 5 years	Outside, near each HRSG, [A]	Solid Crystals	Initial startup and periodically onsite
Sodium Nitrite	Cleaning of HRSG, initial startup and once every 3 to 5 years	Outside, near each HRSG, [A]	Solid	Initial startup and periodically onsite
Sodium Sulfate	Brine concentrator water chemistry adjustment	Water treatment building, [C]	Solid	Continuously onsite
Stabilized Bromine (e.g., NALCO STABREX ST70)	Biocide for circulating water system	Cooling tower chemical feed area, [J]	Liquid	Continuously onsite

TABLE SW85C-1
Use and Location of Hazardous Materials

Chemical	Use	Storage Location[1]	State	Type of Storage
Sulfur Hexafluoride	Switchyard/switchgear devices	Contained within equipment, [I]	Liquid	Continuously onsite
Sulfuric Acid (H_2SO_4)	Circulating water pH control	Outside, near cooling tower chemical feed area, [J]	Liquid	Continuously onsite
Trisodium Phosphate (Na_3PO_4)	Boiler water alkalinity control	Cycle chemical feed building, [G]	Liquid	Continuously onsite
(e.g., NALCO 7208)				

1. Storage location code letter designations, shown in brackets following storage location descriptions, are shown in Figure SW-85c-1.
2. Anti-freeze will be stored in the water treatment building, however, diluted anti-freeze will be contained throughout the site in closed loop cooling systems include the auxiliary cooling water system (if a closed loop system is used), air compressors, and diesel fire pump.
3. Cleaning chemicals/detergents will be stored in the water treatment building and maintenance shop, but also used throughout the site (e.g. HRSGs, CTG water wash skid and sump).

WALNUT ENERGY CENTER
(02-AFC-4)
DATA RESPONSES, SET 1B

BACKGROUND

In the Applicant's Data Adequacy Response WR-3 (Dec. 12, 2002), construction water demands may be met from the following sources: an existing on-site well located on the proposed 69 acre parcel, TID's existing well at the Walnut Substation, TID surface (irrigation) water and City of Turlock potable water. Since recycled water will not be available during construction, it is not a viable source.

DATA REQUEST

86. Please provide additional information regarding the proposed use of nearby wells to serve construction water supplies to the project. Include in this information a discussion and diagrams of the existing facilities, the depth of the wells and operating capabilities. In particular, if modifications to the existing wells are required or pipelines will be needed to convey water from these wells, provide a detailed description of the needed modification, required pipelines (size and routing) and any other changes needed to use these facilities. Please also explain proposed use of these wells after the completion of construction of the WEC.

Response: The Applicant's preferred source of water for construction-related activities such as dust control, soil compaction, and concrete curing is from TID's existing well at the Walnut Substation. Initial investigation of the existing well located directly north of the 69-acre parcel (previously represented as being on the 69-acre parcel in the Applicant's Data Adequacy response) has determined that this well may no longer be operable. Figure SW-86-1 shows the locations of the two wells and the proposed routing of the temporary pipelines from these wells to the project site.

If the well directly north of the project site is useable, a 2- to 3-inch temporary pipeline will be routed from the well to the construction staging area where it will be used to fill an elevated gravity water tank (used for filling water trucks) and a hydro-pneumatic tank that will provide a pressurized source of water for general construction use. Following construction, the temporary pipeline will be removed and this well will no longer be used for WEC.

If the Walnut Substation well is used, a 2- to 3-inch pipeline will be routed from the Walnut Substation to the WEC construction staging area where it will similarly be used to fill an elevated gravity water tank and hydro-pneumatic tank. Since this pipeline will need to cross both the railroad tracks and Washington Road, trench-less technology will likely be used to minimize disruption of rail and road traffic. Environmental monitoring of this construction effort would occur, as appropriate. Following construction of WEC, the temporary pipeline will be removed (with exception of the portion under the railroad tracks and Washington Road, which may be abandoned in place) and the well will continue to be used for the Walnut Substation. Data on this well is provided as Attachment SW-86.

87. Please provide information on the proposed use of TID surface irrigation water, including the location of the water, diversion and or conveyance structures required to transport supplies to the site (and their routes) and expected water quality.

Response: The closest TID canal delivering surface irrigation water to the project area is Lateral 4, which runs in an east-west direction approximately 1 mile north of the WEC site. To use this supply for construction purposes, water would need to be pumped out of an open canal and transported to the WEC site by truck or a temporary pipeline.

Technically, TID irrigation water could be conveyed directly to the WEC site through Improvement District pipelines; however, this is not a logistically feasible alternative, as the WEC's use would need to be coordinated with that of the farmers using the same supply for irrigation. While such coordination may be feasible for farmers who are typically operating on a multiple day rotation (up to 10 days) when using this water for irrigation, it would not be feasible as a construction supply, as construction water would need to be available on continuous basis. Also, the TID irrigation canals are operated on a seasonal basis and would thus not be available to serve the project's construction needs at all times of the year. While TID surface irrigation water was listed as a potential source of construction water in the Applicant's Data Adequacy Response to WR-3, for completeness, the Applicant determined that groundwater from either of the two nearby wells described in Data Response #86 is a preferable source. Thus, no temporary facilities or pipelines are proposed for the purpose of using TID surface irrigation water as a construction supply.

88. Please provide capacity and routing information for any temporary pipelines needed to convey City of Turlock potable water to the construction site until such time as the permanent pipeline is installed.

Response: City of Turlock potable water is not presently available in the immediate project vicinity. No temporary pipeline will be constructed to convey potable water to the project site. Since the permanent potable water pipeline will likely be completed prior to the end of construction of the WEC, potable water may be used for construction water toward the end of the construction phase. In this case, the permanent potable water pipeline would be used to deliver construction water to the project site.

BACKGROUND

A brief groundwater discussion is provided on pages 8.14-9 and 8.14-10 of the AFC. Three documents are referenced in this discussion.

DATA REQUEST

89. Please provide copies of the following referenced documents: Groundwater Management Plan for the Turlock Basin (1997); Water System Master Plan

(1993); and Master Environmental Assessment for the City General Plan (City of Turlock, 2002a).

Response: Due to their size, five copies of the Groundwater Management Plan for the Turlock Basin (1997) [Attachment SW-89A]; Water System Master Plan (1993) [Attachment SW-89B]; and the Master Environmental Assessment for the City General Plan (City of Turlock, 2002a) [Attachment SW-89C] will be provided to staff.

BACKGROUND

As discussed on p. 8.14-10 of the AFC, the project site is within the dam failure inundation zone for the New Don Pedro Dam.

DATA REQUEST

90. Please provide information of the expected worse case depth of projected inundation, and any design features incorporated into the WEC that will minimize damage from inundation on the plant.

Response: The worst case depth of the projected inundation is greater that 82 feet above mean sea level (msl), and less that 95 feet above msl.

The Applicant proposes no design features to minimize damage. The inundation levels are based on several assumptions, such as a full dam breach in one hour's duration with a full reservoir behind the dam. The chance of such an event are extremely unlikely, given the type of dam (earth and rock-fill).

91. Please provide a copy of the studies done regarding the modeled failure of the new Don Pedro Dam (referenced as City of Turlock 2002b).

Response: Three documents have been prepared that address impacts from the failure of Don Pedro Dam. They are:

- 1973 Innudation Study (Attachment SW-91A)
- Don Pedro Dam Dam Break Study, prepared by Bechtel Civil Inc. January 1989 (Attachment SW-91B)
- Don Pedro Dam Dam Break Study, prepared by Bechtel Corporation. March 2001. (Attachment SW-91C)

Due to the size of these documents, five copies of each are being furnished to staff. Electronic copies will be provided to others upon request.

BACKGROUND

The applicant proposes to dispose of sanitary wastewater into an on-site septic system and leach field (AFC, p. 2-9). No specific information on the design and or capacity is provided to verify that the construction and operation of the system will conform to local

requirements. Depth to groundwater at the site is discussed in several parts of the AFC and is said to occur 7 to 12 feet below ground surface. However, groundwater depths may be shallower according to the AFC, occurring on the order of 1 to 2 feet below ground surface.

DATA REQUEST

92. Please provide a preliminary design for the sanitary septic system, including all features, capacity, calculations, and assumptions. Please provide a discussion of the conformance of the design with specific local requirements. Include a discussion of any needed features to address the occurrence of shallow groundwater.

Response: In areas where existing sanitary sewer systems exist, the City of Turlock requires that new developments connect to the City's sewer system. Since no sanitary sewer system presently exists in the vicinity of the WEC project site, the City will allow the use of an onsite treatment system and defers to Stanislaus County for the design requirements and approval. Within Stanislaus County, Measure X was an initiative passed that requires primary and secondary treatment for sanitary sewage from new urban development. In Measure X Implementation Guidelines contained in a County memorandum (Attachment SW-92-1), the County requires that individual commercial and industrial projects use appropriately sized off-the-shelf National Sanitation Foundation (NSF) approved secondary treatment units meeting EPA secondary treatment guidelines. The sanitary septic system for the WEC will incorporate a secondary treatment unit into the design of the system. Attachment SW-92-2 is a catalog cut of a typical system that would meet the County's requirements.

The WEC sanitary sewage treatment and disposal system will be designed in accordance with the Uniform Plumbing Code (as amended by Stanislaus County), and EPA's Design Manual for Onsite Wastewater Treatment and Disposal Systems.

As shown in AFC Figures 2.2-6a and 2.2-6b, the estimated sanitary wastewater flow to the treatment system is 0.4 gpm (or approximately 500 gpd). This value was calculated based on a maximum of 16 people onsite on a given day at 35 gpd/person. The total of 16 onsite personnel is comprised of 6 administrators and 5 maintenance personnel working normal 8-hour days plus 2 operators per shift working two 12-hours shifts per day, plus the equivalent of 3 additional people to account for visitors and temporary Staff. For comparison purposes, residential wastewater production rates are typically assumed to be about 45 gpd/person. Since most workers will conduct their major water consuming activities at home (e.g. showers, clothes washing, dishwashing), 35 gpd/person is believed to be a very conservative assumption. As another comparison, Table 4-6 of the EPA Design Manual indicates a range of 7.9 to 17.2 gpd/person (14.5 gpd/person) for industrial buildings.

The septic tank will be designed to have at least a 24-hour fluid retention time at the maximum sludge depth and scum accumulation per the EPA Design Manual. The secondary treatment unit will have a capacity of not less than 500 gpd.

Because groundwater has been reported to be as high as 1-foot below the ground surface (during heavy rains occurring in the winter of 1997/1998), a mound system will be used for disposal of the treated wastewater. The mound system will be designed in accordance with the EPA Design Manual. The fill material will be selected to provide an infiltration rate of not less than 1.2 gpd/sf. At 1.2 gpd/sf, the minimum absorption bed area required to dispose of 500 gpd of treated wastewater is 417 sf. The native site material is estimated to support a percolation rate 5 to 30 minutes/inch. Per Table 7-10 of the EPA Manual, an infiltration rate of 1.2 gpd/sf may be used to determine the minimum basal area or the mound. Since this is the same infiltration rate as was used to determine the minimum absorption bed area, the basal area will be 417 sf plus the area occupied by the mound side slopes, which will be constructed no steeper than 3:1. Effluent distribution will likely be via a pressurized distribution network where the distribution laterals where the laterals are located a minimum of 4 feet above the high groundwater level.

93. Please locate on an appropriate site map the proposed location of the septic leach field.

Response: The proposed location of the leach field is shown on AFC Figure 2.2-1 (Item 49). The leach field will be set back from the Administration/Control building and property line per the separation distances recommended in the EPA Design Manual for Onsite Wastewater Treatment and Disposal Systems (10 to 20 feet from building foundations, 5 to 10 feet from property boundaries).

BACKGROUND

WEC will require approximately 1,800 acre-feet/year of water to meet its operational requirements. Ninety-seven percent of this demand is for cooling purposes. The applicant is proposing to use recycled water as soon as the City of Turlock has completed modifications to their wastewater treatment plant (WWTP) to meet new discharge requirements and makes Title 22 recycled water available. Until recycled water is provided to WEC, the applicant proposes to use potable water supplied by the city to meet project demands.

The AFC (p. 8.14-14) includes a discussion of the conformity of the project with State Water Resources Control Board's 1975 policy (SWRCB Policy 75-58) regarding power plant cooling and alternatives. All SWRCB 75-58-specified alternatives were found to be either environmental undesirable or economically unsound compared to the applicant's proposed supply of recycled water. The applicant did not evaluate the possibility of using dry cooling or poor quality groundwater in the vicinity of the project. The applicant states on page 8.14-14 that no sources of naturally brackish water exists in the vicinity

of the project, yet shallow groundwater does exist at the site (see Section 8.15 and Appendix 10G) and staff has been informed that it is of poor quality. No alternative analysis to the use of potable water for the bridge or back-up supply was done.

DATA REQUEST

94. Please provide details regarding the feasibility and environmental impact analyses conducted by the applicant regarding alternative water supplies, including:

    a. impacts on water use, other users of these supplies and waste discharge in comparison to those supplies currently proposed for the project;

    b. all economic factors considered (such as capital and operating costs including water purchase and infrastructure price; efficiency losses and economic impacts; etc...) and all assumptions and or vendor data to support these estimates;

    c. changes in plant and linear facility infrastructure required to support each technology;

    d. plant efficiency and output calculations and assumptions for each alternative considered; and

    e. all information sources and or references.

    Response: Two alternative water supplies are addressed in this data response: shallow groundwater/irrigation return water and TID's surface irrigation water.

Shallow Groundwater/Irrigation Return Water

TID performed a variety of preliminary evaluations of the potential to supply the WEC with shallow groundwater/irrigation return water as the primary source of supply prior to selecting recycled water as the preferred option. A primary concern in these evaluations was to devise a collection system for shallow groundwater/irrigation return water which could reliably meet the needs of the WEC. A number of collection options were evaluated, including the installation of new shallow wells. The preferred conceptual option would supply the WEC with shallow groundwater collected from existing on-farm tile drainage systems. The drainage system is extensive and under present conditions could create a near year-round supply of water, although continuing agricultural conservation should reduce tile-water flows over time. The tile-water collection system could supply approximately 98% of the cooling tower makeup requirements. However, both the quantity and the quality of water available over the life of the project are unknown. Given TID's responsibility to provide electricity to its customers, it is essential that it have a reliable water supply.

The conceptual project involving the use of shallow groundwater/irrigation return water would capture water from existing sumps into a central collection pool. From this point the water would be pumped through a new 5.5-mile conveyance pipeline to the

WEC. The conceptual collection system and pumping pool is estimated to cost approximately $1.6 million for construction. With engineering and allowance for unforeseen work, the tile-water collection project might cost approximately $2 million. In addition to this collection system, it would be necessary to construct a 5.5-mile pipeline from the collection pool to the WEC. This pipeline is approximately 3.9 miles longer than the alternative recycled water pipeline, which would convey effluent from the City of Turlock Wastewater Treatment Plant. This would increase pipeline costs compared to the alternative by approximately $2 million. Thus, overall the conceptual project would increase costs compared to using recycled water by approximately $3 million. Annual operating costs would also likely be slightly higher than the recycled water alternative, due to higher energy used for pumping and a more extensive system to maintain

Preliminary evaluations of the shallow water quality indicate that the projected TDS of the tile-water is approximately 15% higher than recycled water, with conductivity projected to average 1,153 micromhos. Thus the tile-water, with a TDS in the range of 700 ppm does not appear to be "brackish". Based upon this information alone, the use of the tile-water would result in only a minor increase the cost of on-site water treatment.

While prior evaluations of shallow groundwater focused on use of this source as a primary supply to WEC, this option was not previously evaluated as a potential source to reduce the use of potable water as a bridge and back-up supply. In this regard, it does not appear to be reasonable to consider the extensive system envisioned for a primary supply. Instead, the option of drilling shallow wells on-site has been evaluated. In this option it is assumed that potable and recycled water facilities would be installed as proposed, which allows fire flow and potable needs to be met. In addition, shallow wells would be constructed and operated to meet the process needs prior to the completion of recycled water facilities and during future outages of the recycled water system.

In this alternative it is assumed that two wells, (150 ft deep, 1,200 to 1,500 gpm/well) would be drilled on the 69-acre parcel. The assumed capital cost for these wells is estimated to be approximately $200,000 ($100.000 for drilling the wells and $100,000 for interconnecting piping, electrical and controls).

In order to analyze the effects that use of this water as backup or bridge supply would have on the on-site water treatment design, the water quality from shallow wells near the site was evaluated. Table 8.14-9, included in the Applicant's Data Adequacy Responses, provides water quality data for shallow wells in the project vicinity. Wells 309 and 312, located approximately 0.7 miles west of the project site, are the closest wells for which data is included in Table 8.14-9. Thus, the average quality of these two wells, presented in Table SW94-1, is representative of the likely water quality of the shallow groundwater at the project site.

TABLE SW94-1
Estimated Water Quality for Shallow Groundwater at WEC Site

Constituent/Parameter	Value	Units
Sodium[1]	123	ppm
Calcium[1]	129	ppm
Magnesium[1]	45	ppm
Bicarbonate[1]	542	ppm
Chloride[1]	75	ppm
PH	7.15	pH units
Phosphorus	0.04	ppm
Nitrate	2.75	ppm
Sulfate	63	ppm
Boron	0.16	ppm
TDS	1,085	ppm

1. Values shown have been converted from units of meq/liter (as they appear in Table 8.14-10) to ppm.

Using the above water quality, additional water balances were prepared to evaluate the impact on the plant design that would result from the use of shallow groundwater for the bridge supply and backup (see Figures SW-92-1 and SW-92-2). The net result is that the cooling tower blowdown flow would be similar to the AFC design, resulting in brine concentrators of a similar size. However, because the TDS of the shallow groundwater is about twice that of the recycled water, the recovery rate of the brine concentrators would not be as high as the AFC design (98% versus 99%). This would result in about a 30% increase in the concentrate flow to the brine crystallizers, resulting in the need for larger crystallizers and filter presses. The larger crystallizers and filter presses would result in an added capital cost of approximately $165,000.

Operating costs could also increase as a result of the greater electrical demand associated with the larger crystallizers. In addition, the salt cake produced by the ZLD system would be about 40% greater than the AFC design, resulting in increased salt cake disposal costs. It is likely that increased operating costs would more than offset any savings from reduced purchases of potable water from the City.

Thus, the development of shallow wells as a backup/bridge supply to reduce potable water use would increase capital costs by approximately $365,000 ($200,000 for wells and $165,000 for a larger brine crystallizer). Additionally, operating protocols and a structure for regulatory oversight of this water source, whether as a primary or a back-up/bridge supply, does not exist. This is in sharp contrast to recycled water and potable water. In each of these cases, existing agencies compliance with CA Code of Regulations Title 22 ensures that water quality is suitable for use in cooling towers. Measures to

ensure the quality of shallow groundwater, if feasible, would undoubtedly add to the cost of using this source. Lastly, it is important to note that the development of on-site wells could hamper farm operations on the remaining land within the 69 acre parcel, depending on where the wells are located.

Surface Irrigation Water

While TID has substantial pre-1914 water rights, it did not propose using surface irrigation water as a bridge and back-up supply. However, it was evaluated for completeness.

In order for surface irrigation water to be used, additional facilities, including a pump station and pipeline or new open channel canal, would need to be constructed to deliver surface water to the project site. Since the potable water pipeline will be installed as part of the project for the purpose of supplying potable and fire protection water to the site, no additional water conveyance facilities are required. Thus the potential environmental impacts associated with a second water supply system can be completely avoided.

TID's surface canals are currently operated to supply irrigation demands in the spring and summer months but are used to convey stormwater in the rainy season. It would not be feasible to maintain space in the canals for storm water if they were maintained full to supply WEC. TID's surface irrigation water facilities are currently operated to provide water to farmers who are typically operating on a multiple day rotation (up to 10 days) when using this water for irrigation. The canals are thus not maintained full on a contiuous basis even during irrigation season. Thus the canals could not provide backup on a continuous basis .Thus, the use of TID's surface irrigation water as a back-up supply would not be as reliable as City water. In the event of an interruption in the supply of recycled water, city water will be available at the site, under pressure, for immediate use as the back-up supply. On the other hand, TID's surface irrigation water facilities may or may not be operating at the time the back-up supply is needed. Because the back-up supply should be needed very infrequently, it would not be reasonable or cost-effective for TID's ratepayer owners to pay to operate surface water facilities during winter months only for the purpose of providing the back-up water supply for the WEC when another feasible supply exists.

The treatment required to use surface irrigation water within the processes at the WEC has not been identified. Due to the variable nature of water quality within the canal it may not at all times be suitable for makeup to the cooling towers at WEC. Treatment facilities may be required to provide filtration and disinfection in order to comply with California Department of Health Services requirements. These treatment facilities could potentially add millions of dollars to the cost of this option.

95. Since alternative cooling technologies were not included in the AFC discussion of alternatives, please provide an evaluation of the use of dry and wet/dry cooling alternatives as compared to the proposed use of recycled water for plant cooling.

Include in this discussion information regarding the differences in environmental impacts and capital and operating costs.

Response: The development of a recycled water supply to serve the WEC is consistent with the objectives of the City of Turlock and TID to develop beneficial re-use alternatives for the City's wastewater. Since the WEC would use recycled water as its primary source of cooling water, a detailed evaluation of a dry cooled facility was not performed. Wet cooling with recycled water is considered preferable to dry cooling for a number of reasons. Wet cooling results in a facility with a higher power output at a significantly lower capital cost than an alternative dry cooled facility. From an operating perspective the wet cooled facility provides enhanced power output by utilizing a renewable water resource. The more efficient wet cooled facility allows greater operating revenues net of all costs over the life of the facility, offering enhanced benefits to the ratepayers within TID.

Because the proposed use of recycled water will not result in significant environmental impacts and will, in fact, result in environmental benefits, detailed engineering evaluations of a Dry-cooled facility were not performed, meaning that site-specific detailed cost and environmental data for this scenario are not available. However, a rough order of magnitude estimate is utilized in the discussion that follows of the impacts of implementing dry cooling at the WEC.

TID has provided the following information to satisfy Staff's request for information. However, as a threshold matter, TID believes that it is important to note that under CEQA, dry cooling would only be required as an alterative if there was a finding that the cooling water aspects of the project had the potential to cause a significant impact that could not be mitigated to a level of less than significant. TID respectfully suggests that the information presented in the AFC and subsequent filings demonstartes that the project will have no such significant impacts. Further, as discussed below, TID believes that dry cooling itself has the potential to cause significant impacts and thus does not represent a feasible alternative. Finally, the District's Board believes that dry cooling for this facility would be inconsistent with the Board's fiduciary duty to its rate-payer/owners, the citizens served by TID.

Capital Cost Impacts

The higher capital cost of air-cooled facilities compared to dry cooled facilities is well established. Although the dry cooled facility avoids costs for off-site recycled water development and on-site cooling tower water treatment systems, these cost savings are overwhelmed by the higher costs for an air-cooled condenser. Net of all costs, the capital cost of an air-cooled facility would be on the order of $10 million more than the cost of a facility utilizing wet cooling with recycled water as proposed. It is also important to note that dry cooling units must be developed on a site-specific basis, necessitating interaction with vendors and other costs to TID.

Operating Impacts

Water Use

The use of dry cooling would reduce water consumption by WEC by approximately 97% from the proposed use of 1,800 acre-feet per year to on the order of 50 acre-feet per year. Reduced water use would save costs associated with pumping and delivery of recycled water to the site. Additionally reduced water use would mean less operating costs for on-site zero liquid discharge water treatment and offsite sludge disposal associated with that system.

Lost Power Generation

The operation of air-cooled condenser fans would consume significant amounts of power compared to evaporative cooling towers. Also, during hotter periods, the less efficient air-cooling would reduce power output from the steam turbine causing further reductions in power generation from the facility. At average operating conditions the power production from a dry cooled facility would be approximately 2 MW less than the output from the proposed wet cooled facility. On the hottest days of the year plant output would be reduced on the order of 8 MW. During peak periods, TID would be forced turn to other sources of supply to make up the shortfall. These alternative supplies tend to be the older, less efficient units that are dispatched only during the most extreme conditions, resulting is additional potential environmental impacts associated with the additional units required to meet peak load.

Net Operating Impacts

A detailed comparison of the operating costs for wet cooling versus dry cooling has not been performed. Operating costs for water, on-site treatment, and residual disposal are on the order of $500,000 to $1 million annually so the air-cooled facility would eliminate such costs. On the other hand, the value of lost power generation from the air-cooled facility is also probably within this range. Thus the operating cost impacts of an air cooled facility do not appear to be significant compared to the wet cooled facility incorporating zero liquid discharge treatment as proposed.

Other Environmental Impacts

In other siting cases, environmental impacts associated with either wet or dry cooling are significant. In such instances, the decision as to an appropriate alternative cooling technology can have significant consequences beyond the considerations of cost. Invariably, a decision to air cool is made only when a potentially significant water resource impact cannot be economically mitigated by other means.

In this instance however, the WEC's use of recycled water should have an overall benefit to water resources in the region and pose no significant environmental risk. The use of recycled water at WEC assists in an overall effort to beneficially reuse effluent from the City's Wastewater treatment plant by ensuring early development of backbone recycled water infrastructure. The reuse of City effluent by WEC is consistent with the City's

efforts to develop beneficial reuse of wastewater and reduce the City's wastewater discharge.

The higher noise level of air-cooled equipment can be significant in a decision of cooling technology. Additionally, the commission has at times found a significant visual impact from either an air-cooled condenser or a visible plume at wet cooled facilities. Air quality impacts associated with additional generating units required to make up lost generation have also been considered a potentially adverse environmental impacts that could be avoided. Assuming a finding of potentially significant impacts justified further investigation, a more detailed analysis would have to be performed to determine whether these and similar impacts might be significant in this case.

Summary

Given the factual circumstances of this case, wet cooling affords significant benefits both in terms of cost and efficiency of the proposed WEC. Wet cooling establishes beneficial reuse of effluent that is today discharged, enhancing the reuse program of the City. There is no significant adverse impact from the employment of wet cooling that would justify the substantially higher cost of an air-cooled facility.

96. Provide a feasibility analysis of using the Harding Drain irrigation return water or the shallow, low quality groundwater supply as an alternative to potable water for the bridge and back-up water supplies.

Response: Please see Data Response #94 for a discussion of the potential to use shallow groundwater/irrigation return water and surface irrigation as supply to WEC.

97. The applicant has indicated that the cooling towers will operate at approximately 3.5 cycles of concentration. Other facilities that have employed zero discharge systems are capable of greater cycles of concentration, thus maximizing the efficiency of water use on site. Please provide an analysis and discussion of the possibilities of cycling the concentrations in the cooling towers up to 10, 15 and 20 times. Include in the analysis the use of a side stream softening system. Explain any constraints that may limit the number of cycles of concentration. The analysis should include the impacts on water use and waste discharge, economic impacts (capital and operating costs), plant efficiency and output.

Response: The difference between the number of cycles of concentration that the Applicant has indicated in the AFC and that which may have been indicated for other zero liquid discharge (ZLD) projects, most likely is found in the definition used for "cycles of concentration". In a conventional cooling tower arrangement, the cooling tower cycles of concentration is equal to the allowable level of a particular constituent or parameter in the circulating water (e.g. silica, calcium, chloride, sulfate, TDS) divided by the level of this same constituent or parameter in the makeup water. Where multiple sources of makeup water are proposed, as is the case for the WEC where a portion of the makeup water is distillate from the ZLD system, the quality of the makeup water must first be determined by combining the various flow streams to determine the quality of

the blended water. The lowest number of cycles, calculated for all constituents or parameters of interest, establishes the limiting cycles of concentration. From the cycles of concentration, evaporation, and drift, the cooling tower blowdown can be calculated using the equation:

Blowdown = {Evaporation – [(Cycles – 1) * Drift]} / (Cycles – 1)

Similarly, knowing the evaporation, blowdown, and drift, the cycles of concentration may be calculated by rearranging the above equation:

Cycles = (Evaporation + Drift + Blowdown)/(Blowdown + Drift), or

Cycles = Makeup/(Blowdown + Drift)

Figures 2.2.6a and 2.2.6b in the AFC indicate 3.5 cycles of concentration, based on the above equation. In this case, the blowdown quantity is that flow leaving the circulating water system and entering the ZLD system. When ZLD systems are involved, it is not uncommon for some engineers to calculate cooling tower cycles based on representing the blowdown flow as being that flow which leaves the overall ZLD system. While this method of calculation is not representative of the chemistry of the circulating water, it is useful in showing the level to which water is recycled through use of the ZLD system. In the case of WEC, if the calculation were performed using the reject stream from the brine concentrators as the blowdown flow, the cycles of concentration would be more than 250. Since a portion of the brine concentrator reject stream is recovered in the brine crystallizers, one could similarly calculate the blowdown flow using the reject stream from the brine crystallizers/filter press, in which case the cycles of concentration would exceed 2000.

With respect to evaluation of side stream softening, this evaluation is unnecessary as the Applicant's proposed ZLD system already recovers the maximum amount of water feasible.

The primary constituent limiting the cooling tower cycles of concentration for the WEC is silica. Since the project incorporates a ZLD system, the quality of the source water does not effect water consumption but does impact the sizing of the ZLD equipment and also the amount of salt cake produced.

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(02-AFC-4)
DATA RESPONSES, SET 1B

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(02-AFC-4)
DATA RESPONSES, SET 1B

INSERT FIGURE SW-84A-1

INSERT FIGURE SW-84E-1

INSERT FIGURE SW-84F-1

ATTACHMENT SW-84F-1

Storm Water Pond Sizing Calculations

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(02-AFC-4)
DATA RESPONSES, SET 1B

INSERT FIGURE SW-85C-1

INSERT FIGURE SW-86-1

ATTACHMENT SW-86

Well DataSheets

ATTACHMENT SW-91A

1973 Innudation Study

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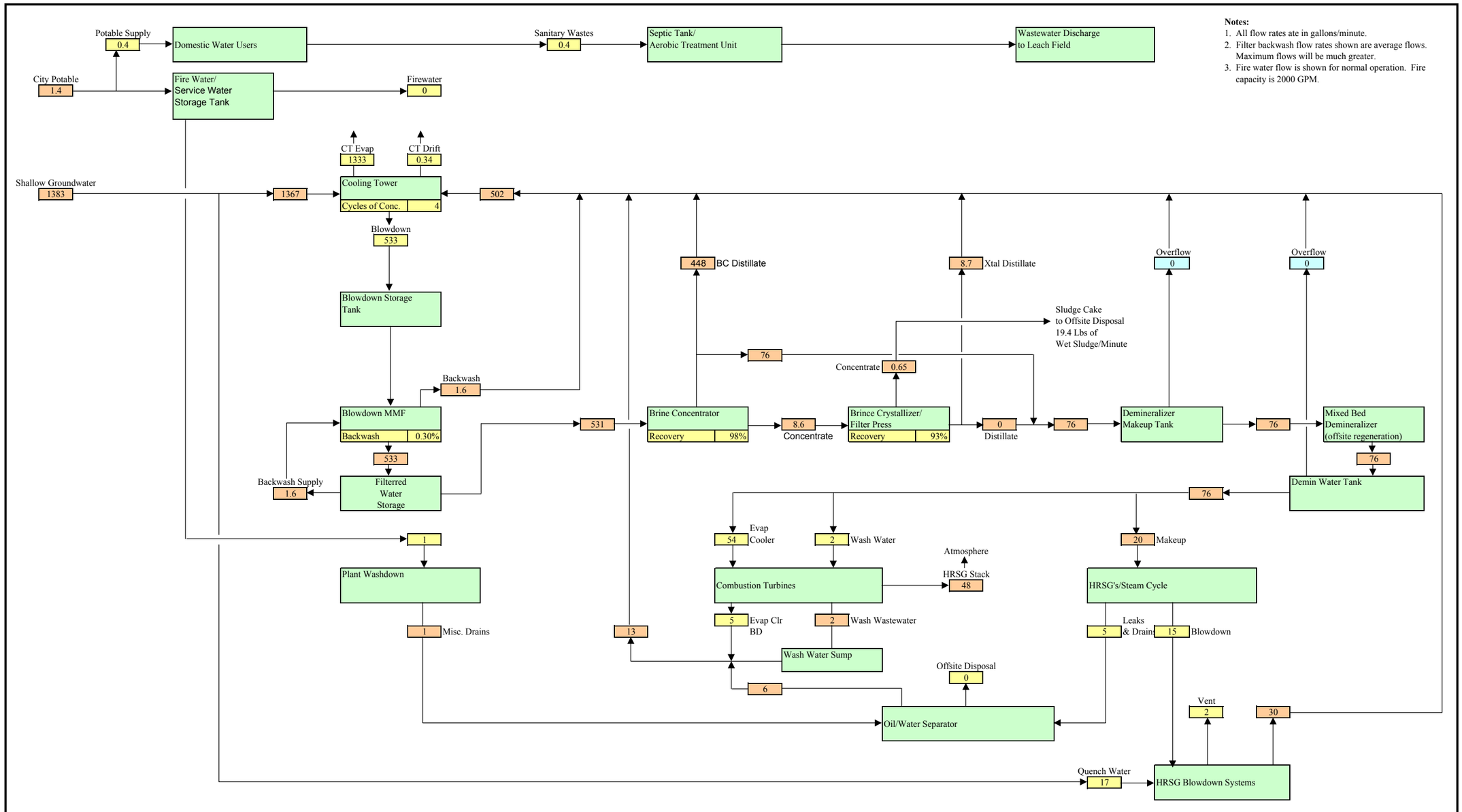
(02-AFC-4)
DATA RESPONSES, SET 1B

ATTACHMENT SW-91B

Don Pedro Dam, Dam Break Study, 1989

ATTACHMENT SW-91C

Don Pedro Dam, Dam Break Study, 2001



Rev.	Description	By	Date
A	Issued for Data Response 92	JAM	02/20/2002

Design Case: **High Temperature Day**

Base Load - 2 CTG's at 100%

Configuration:	2X1	Amb. Pressure:	14.65 psia
Dry Bulb Temp.:	97.00 deg F	Wet Bulb Temp.:	70.00 deg.F
Evap Cooling:	Yes		
Power Aug.:	No		
Duct Firing:	No		

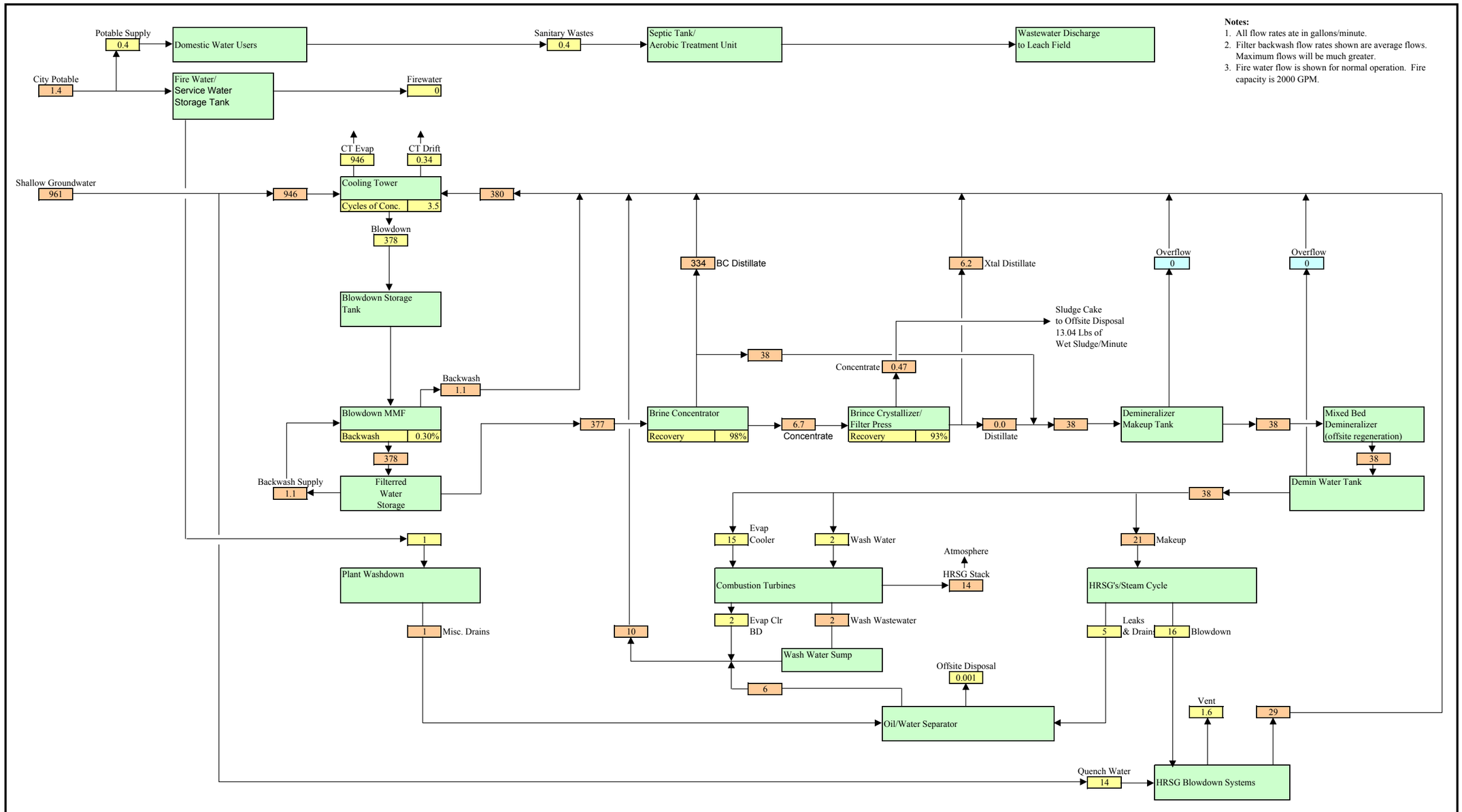
CALPINE

Turlock Irrigation District
Walnut Energy Center

Plant Water Balance
Figure SW-92-1

Jim Moen
Corporate Water Specialist

Rev. A



Rev.	Description	By	Date
A	Issued for Data Response 92	JAM	02/20/2002

Design Case: **Average Temperature Day**

Base Load - 2 CTG's at 100%

Configuration:	2X1	Amb. Pressure:	14.65 psia
Dry Bulb Temp.:	61.00 deg F	Wet Bulb Temp.:	53.00 deg.F
Evap Cooling:	Yes		
Power Aug.:	No		
Duct Firing:	No		

CALPINE

Turlock Irrigation District
Walnut Energy Center

Plant Water Balance
Figure SW-92-2

Jim Moen
Corporate Water Specialist

Rev. A